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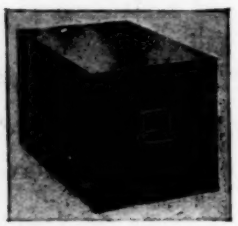

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The Egg-Cell.

Modern research is agreed that the human egg-cell escapes from the follicle about midway between two menstrual periods, but how long it takes to descend into the uterus is not known with certainty. Under normal circumstances only one dehiscence occurs a month. In certain individuals dehiscence either does not occur at all or only very seldom, either because the ovaries are naturally defective or have been damaged by inflammation or new growth, or because, though healthy, their ovulating function is in abeyance owing to hormonal deficiency. The sterility produced by any of these causes is absolute so long as the cause persists.

Sterility may also be relative, for the results of stock-breeding show that amongst a species some females are infertile to certain of the males, though they are fertile to the rest, and this almost certainly holds good for human beings, though it is difficult to prove in individual cases. Arthur Robinson in a classical paper showed that in animals the fertilised ovum may for no known cause perish at a very early period after fertilisation before any signs of pregnancy have had time to declare themselves. This probably happens with more or less frequency in most married women, and constantly in some, who are then labelled as sterile, though in fact they are not really so.

The Sperm.

It is generally agreed that fusion between the egg-cell and sperm takes place in the tube, but how long it takes the human sperm to ascend thus far is not accurately known, and still less the period of time over which, having gained the tube, it can maintain itself there.

Sperm-impotence may be absolute owing to deficient vitality of the male element, or it may be relative just as egg-cell infertility may be. Further, the sperm though healthy at the start of its journey may have its potency destroyed or weakened by the toxic effect of abnormal discharge from the female passages. We know very little about this, for the task of mixing together vaginal secretion and semen and watching what happens under the microscope is distasteful, but such researches carried out on the Continent indicate that the toxic effect of vaginal discharge can be an important factor in sterility. I have always thought that the phenomenon of profluvium seminis must be due to the sperms retreating en masse from an environment hostile to them.

Though the sperm be potent its deposition may be defective, either on account of weakness of the male organ or deformity such as hypospadias. That its powers of ascent are at times remarkable is shown by the fact that deposition on the vulva may be followed by pregnancy, and I have seen two cases in which conception occurred though the woman's clothes barred direct contact.

The Trackway.

The female genital canal is divisible into (1) the ovarian segment; (2) the peritoneal segment; (3) the uterine segment; (4) the cervical segment; and (5) the vaginal segment, and if any one of them be occluded pregnancy cannot occur.

Ovarian segment.—That the follicle after dehiscence forms the upper end of the female genital canal is proved by the occurrence of ovarian pregnancy. Failure of dehiscence may be due to some primary defect in the ovarian structure, but more commonly it is the result of peripheral sclerosis or adhesions of inflammatory origin.

Peritoneal segment.—The fact that the peritoneal cavity itself forms part of the genital trackway, is not, I think, sufficiently appreciated, and yet the distance the ovum has to travel from the follicle to reach the fimbriated extremity of the tube is in most cases the best part of an inch, whilst in those instances where pregnancy occurs in a woman possessing only one ovary and one tube and those on opposite sides, the distance travelled must be two inches or more. The idea that the fimbriated extremity clasps the ovary is no longer entertained, as far as regards human beings at all events, nor does there obtain in our species an obvious mechanism for practically compelling the ovum along the right path such as exists in certain of the lower animals. The relation borne by the fimbriated extremity to the ovary varies immensely in different women. In some it is closely applied to it, but in others it hangs pendant below and widely removed from it. Moreover, the point at which dehiscence occurs on the surface of the ovaries varies. One might have opined that Nature would arrange that it invariably took place on that part of the surface closest to the abdominal ostium, but such is not the case. I have often seen a recently dehisced follicle situated at the inner pole just outside the ovario-uterine ligament and as far away from the abdominal ostium as possible. In short, considering the purpose for which the structures concerned exist I cannot conceive of a more imperfect mechanism, and never cease to marvel at the wonder of conception achieved in spite of such discouragements. It would appear certain therefore that the ovular wastage along the peritoneal segment of the trackway must normally be large, whilst under abnormal conditions, such as adhesions of omentum, appendices epiploicæ or intestine, every egg-cell escaped from the ovary must perish in the abdominal cavity.

Tubal segment.—Our knowledge of tubal occlusion as a cause of sterility has made enormous strides since the invention by Rubin of the tubal insufflation test. The apparatus I use is simpler than Rubin's and has, I think, certain advantages over it. It consists of a hollow uterine dilator to which a rubber bulb and sphygmomanometer is attached by means of lengths of pressure tubing. The cervix is dilated by ordinary uterine dilators to a size just less than the size of the hollow dilator, so that when this is introduced it fits the cervix too tightly for air leakage to occur. The bulb is then compressed with the hand and the pressure applied noted by observing the manometer. With normally patent tubes air passes through at a pressure of 50 mm. or less. Where

* Read before the Windsor Medical Society.

the pressure has to be raised to 100 mm. or over there is a degree of obstruction. This may be due to abnormal smallness of the tubes or to occlusion of one tube only or to kinks or strictures or partial closure of the abdominal ostia. If in spite of the pressure being raised to 200 mm. no air passes, bilateral tubal occlusion in all probability is present. The patient, having been anæsthetised, should be in the lithotomy position and slightly tilted head downwards so that the vagina can be filled with weak mercurial solution which by bubbling will disclose any leakage of air backwards through the cervix. Tubal insufflation is performed by some in the consulting room without an anæsthetic, but I personally disapprove of it, for apart from the fact that sooner or later this practice will result in the hurried carrying up to a bedroom of a fainting or even a dead woman, it is in my opinion impossible under such conditions to be sure of preventing leakage backwards from the cervix, and unless this can be achieved with certainty, the whole proceeding is useless. It goes without saying that the test should never be carried out on a patient whose vagina or cervix presents any suspicion of infection, and it is a wise precaution to prohibit marital relations for some time beforehand.

Lipiodol.—Of recent years another method of ascertaining the state of the tubes has been invented, which consists in injecting lipiodol into the uterine cavity from whence, if the uterine ostia are patent, it passes into the tubes and, if the abdominal ostia also are patent, into the abdominal cavity. The patient is then radiographed and the position and shape of the shadows shows whether the tubes are occluded or not. The method has the advantage over the more simple insufflation that it can show what insufflation cannot show—namely, whether one or both tubes are patent, and also in the event of occlusion, whether the block is at the inner or outer ostium. Such knowledge is, however, of little practical use because in a case of sterility in which investigation either by insufflation or lipiodol shows that though not normally patent a partial degree of patency exists, no operation is indicated, whereas if total occlusion is revealed either by one method or the other nothing less than an endeavour to open up the closed tubes is of any use.

The causes of tubal occlusion are various, first amongst them being salpingitis which may block the lumen at various points, the two most common sites being the inner and outer ostia. In some cases long lengths or even the whole length of the lumen may be obliterated. Next in importance is kinkage, the kinks most often affecting the narrow isthmic portion. They are easily overlooked if one relies merely on sight, but they show up immediately air is blown down the tube from the abdominal ostia. For this purpose I employ a special insufflator, consisting of a bulb to which is attached a nozzle that just passes through the outer ostium. An ophthalmic canaliculus-catheter can be screwed on to the nozzle if the operator wishes to pass the instrument into the narrow isthmic portion of the tube. If a tube is freely patent air can easily be squeezed down it into the uterus with a characteristic gurgle.

The commonest cause of tubal kinkage is retroversion, and this fact largely explains the frequency with which sterility is associated with it.

Finally, the tubes may be congenitally small and narrow so that air scarcely passes through them, or not at all.

Uterine segment.—The uterine cavity is so large that nothing short of a tumour of considerable size in its interior will suffice to block it. Of such tumours fibroids form the vast proportion. Besides occlusion of the uterine cavity by a fibroid these tumours may by the deformity they cause obstruct the tube-uterine junction, and beyond this they are deterrent to conception for reasons at present unknown to us.

Sterility is often ascribed to the uterus being "infantile," but a moment's thought will show this to be an error, for the oösperm can graft in the isthmus of the tube which is far smaller than the smallest "infantile" uterus. That sterility often accompanies a small uterus is due to the fact that the tubes in such patients are often congenitally impervious, or only poorly pervious as I have proved by abdominal exploration on a number of occasions. Moreover, deficient development of the uterus is often accompanied by deficient development of the ovaries, though not by any means always so, for I have five times performed Baldwin's operation for congenital absence of the uterus and vagina, and in each of the patients the ovaries were conspicuously normal.

Cervical segment.—Absolute obstruction of the cervical canal is very rare, but undue narrowness is common. Dilatation of the cervix for the cure of sterility has been a standard operation for a great many years, though having regard to the small size of the sperm in relation even to the narrowest cervical canal it is difficult to see how it acts. That patients often become pregnant after it is not in itself proof of the efficacy of the procedure. Consider, for instance, the case of a healthy young woman of 26 married four years to a healthy young man and no baby yet. It is most unlikely that this girl will not sooner or later conceive without any interference. If it came to betting, none of us would like to wager against that event unless we could get exceptional odds. Nevertheless, the cervix is dilated and six months afterwards the patient conceives. She and her husband will be positive that it was the result of the operation. But are we to record a success?

Great elongation of the cervix may prevent pregnancy because the semen is deposited above it, but I am doubtful whether the tilting of the cervix that occurs in retroversion can have any material effect. Tumours of the cervix such as polyps or small fibroids must obviously act as obturators.

Vaginal segment.—The cavity of the vagina is so large that its total occlusion except by congenital defect is rare. The so-called "imperforate hymen" is the best known example of this. Narrowness of the vaginal entrance sufficient to prevent coitus is, on the other hand, extremely common. In a few cases this narrowness is entirely due to muscular spasm, but as a rule a real narrowness is the basis of the dyspareunia, the muscular spasm being secondary to the pain evoked by the attempted act.

The Site for Implantation.

It is generally considered that certain cases of sterility are due to the endometrium being structurally unsuitable for the oösperm to graft upon. When, however, we consider that grafting may occur into the substance of the ovary, the wall of the tube, and even the peritoneum itself, tissues differing profoundly not only from the endometrium but from one another, it seems difficult to believe that comparatively slight histological changes in the lining of the uterus could completely check the activities of the trophoblast. It seems to me more probable that the fault in these cases lies not with the structure of the endometrial

tissue, but with a change in its secretion whereby it becomes toxic to the oösperm. Fertilisation of the egg-cell normally takes place in the tube and the oösperm has already begun to grow and divide by the time it enters the uterus. Until it has grafted into the endometrium its nutriment would appear to be obtained from the tubal and uterine secretions, and one can well imagine that these, if abnormal, might poison instead of nourishing it. The matter is of practical importance in regard to the question of the utility of curetting in cases of sterility.

Investigation.

In all cases of sterility with no obvious cause apparent the husband should be examined both as regards his physical condition and the state of his semen. As regards this last, I feel sure that the only reliable way is to do it microscopically in his own house almost immediately after it has been passed. A strictly scientific investigator would then proceed to mix the semen with some of the upper vaginal discharge collected in a pipette and watch the behaviour of the sperm under these conditions. This, however, is not usually done.

The woman must be investigated like any other gynæcological case by questioning and physical examination and, this completed, the tubal insufflation test should be carried out. I have already stated that in my opinion this should always be performed under an anæsthetic, and the question therefore arises whether or not the surgeon should advise his patient to let him proceed at once to abdominal section in the event of the test indicating that both tubes are closed. It is important in this connexion to bear in mind that failure to get air to pass along the tubes, though usually due to fixed conditions, may be dependent on temporary causes, such as thickening of the cornual endometrium, or even, it is said, muscular spasm at the tubo-uterine junction. If either of these two latter conditions obtains it will be found on opening the abdomen that air can be forced down the tube though it cannot be forced upwards.

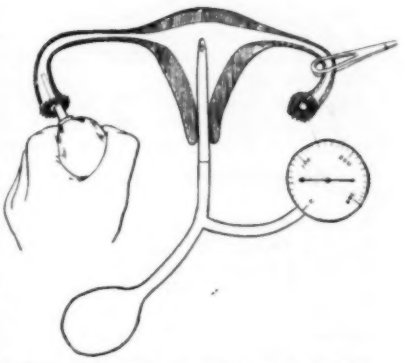
My experience of abdominal operations for sterility has taught me that blockage of this character is not common, but nevertheless in a case in which tubal insufflation indicates that both tubes are blocked, it is often advisable to repeat the test in a month and only proceed to open the abdomen if at this second time of trying air still will not pass. Many women, though they are anxious to have a child, do not desire it sufficiently to make them willing to undergo an abdominal operation for the sake of the possibility of having one.

On the other hand, there are cases in which the presence of marked retroflexion, or uterine fibroids, or a thickening in the region of the tubes, or a past history strongly pointing to salpingitis makes it practically certain that the failure of air to pass is due to a fixed condition, and in such repetition of the test is unnecessary before opening the abdomen.

Remedial Measures.

Reopening the tubes.—Surgical operations for the purpose of reopening closed tubes have only been practised of recent years, but they have already revealed a number of interesting facts with which gynæcology was previously unacquainted. The general procedure is as follows: The patient is first placed in the lithotomy position, the tubal inflation apparatus is inserted, and the patency of the tubes tested. If air will not pass, the vagina is packed with sterile gauze so as to keep the hollow dilator in the uterus in position, and the patient being moved into the Trendelenburg posture, the abdomen is opened. The intestines having been packed off from the pelvis a self-retaining retractor is inserted and the tubes and ovaries, after being inspected and felt, are brought up into positions in which their whole length is plainly seen, adhesions being separated if necessary. A light forceps is now placed on one tube so as to occlude it. An assistant now squeezes the bulb of the insufflator in the uterus whilst the surgeon watches the effect on the unclamped tube. If it is patent the air is seen and heard to pass out of the abdominal ostia. If the abdominal ostium alone is closed the tubes swell up by the pressure of the imprisoned air. If the point of obstruction is further along the tube only that part on the uterine side of the obstruction swells. If the block is at the uterine ostium no change at all occurs in the tube. If the abdominal ostium is open the small bulb insufflator already described should now be inserted and air squeezed into the tube from above. If any air at all passes into the uterus the needle of the manometer attached to the insufflator in the uterus will be seen to rise, because the air forced into the uterine cavity can neither escape through the cervix blocked by the hollow dilator nor through the opposite tube blocked by the forceps. (Fig. 1.) I have already stated that if a tube is freely patent air forced down it can be heard and felt to pass into the uterus, but this is not the case in low degrees of patency which will be missed if insufflation from above is carried out without the insufflator in the uterus. The forceps compressing the opposite tube is then taken off and applied to the tube already tested and the proceedings described are then repeated on the untested side.

FIG. 1.



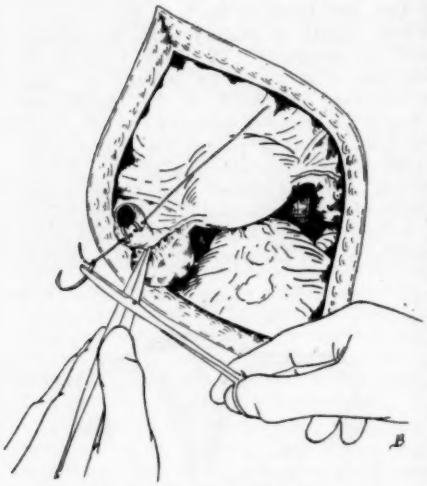
Showing how air blown into the tube from above registers on the manometer below.

Blockage at the abdominal ostium only is the easiest variety of obstruction to treat, requiring simple salpingostomy. The extremity of the tube should be separated from its attachment to the ovary by dividing the ovarian fimbria and the bulbous end slit sufficiently to allow of a cuff being turned back (like the cuff of a dressing-gown sleeve) and fastened so with a few fine catgut sutures. (Fig. 2.) Kinks are a more difficult problem, but usually by pulling them, aided by minute incisions through the peritoneal bands holding them, the tube can be straightened out and air got to pass.

Blockage at the uterine ostium requires for its satisfactory correction reimplantation of the tubes into the uterus. I have long given up trying to pass threads of catgut down the tube into the uterus, being certain that nine times out of ten a false passage is made. The technique of the operation, which I

first performed in 1921, is as follows: I begin by arresting the blood flow through the uterus by placing my myomectomy clamp on its lower segment and ring forceps on each ovariopelvic ligament, the insufflator in the uterus having been first removed. One tube is now dissected out of its corresponding cornu and its patency tested by the small bulb insufflator. (Fig. 3.) If no air passes, a small piece of its inner end is cut off with scissors and the tube tested again. If still no air passes, another small piece is cut off and so on until air does pass. You then have a length of tube freely patent, and it is this that you are going to implant. The same proceedings are then carried out on the opposite side. The fundus of the uterus is now incised transversely from cornu to cornu until the cavity is opened. The inner end of each tube is now laid into its corresponding cornu and fastened there by fine catgut sutures (Fig. 4), after which the incision in the uterus is closed by interrupted catgut sutures. Finally, each tube is sutured to the outer surface of the uterus at the point where it passes into its substance.

FIG. 2.



Fixing the cuff in salpingostomy.

Whichever method be employed to open up the tubes, all adhesions round the ovaries should be cleared away, and in most cases it is advisable to raise the uterus and appendages out of the pelvis by shortening the round ligaments or ventrofixing the uterus. If the uterus is retroverted this should of course be done.

Removal of fibroids.—Fibroids causing sterility should be treated by myomectomy—an operation which occupies a very different position from what it did 20 years ago. It is now possible to conserve the uterus in almost every case, leaving an organ capable of child-bearing. The largest number of fibroids that I have removed from a uterus which subsequent to the operation bore a child is 32. I would refer those interested in the technique of this operation and its results as regards pregnancy to my Hunterian Lecture (THE LANCET, 1931, i., 171).

Dilatation of the cervix.—I am chary of ascribing results to an operation merely because they follow it; nevertheless, I am of opinion that dilatation of the cervix does favour conception though not with anything like the frequency commonly claimed. As quite a number of the young married women wanting children also suffer from "first day" dysmenorrhœa, dilatation often has a double advantage. Moreover, dilatation forms an essential part of tube insufflation which nowadays should always be performed in a case of sterility. To merely dilate the cervix and leave the tubes untested is inadequate practice.

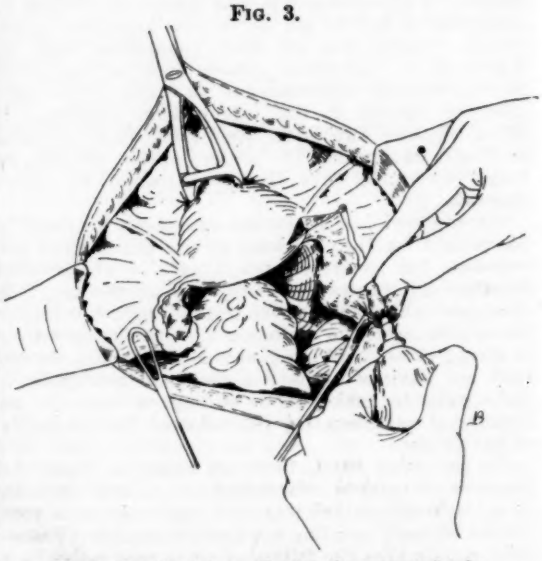
Curettage.—Unless there are symptoms such as menorrhagia indicative of endometrial abnormality, I see no object in curetting the uterus.

Tubal insufflation as a cure.—It is believed by some that insufflating the tubes increases the likelihood of a woman becoming pregnant. The only apparent ground for this belief is the fact that women sometimes conceive shortly after insufflation. From a now extensive experience in viewing the actual condition of the tubes in cases of sterility I am of opinion that it is impossible except perhaps in very rare instances. Patients, of course, accept the association.

Enlargement of the vaginal orifice.—In some cases the failure to conceive is due to imperfect penetration during intercourse. In nearly all of them the vaginal orifice is unduly narrow and rigid and the pain evoked produces a quite natural resistive spasm which increases the difficulty. Women of this type are frequently hypersensitive and overstrung, but it is a mistake to regard the dyspareunia as of purely nervous origin. I have long given up merely stretching the parts under an anæsthetic. It does little or no good as a rule and the failure only increases the patient's concern. The orifice should be deliberately enlarged by a plastic operation. I know few operations that more uniformly yield a happy result.

Stimulating the ovaries.—The fact that the ovaries are not producing egg-cells can only be proved by inspection through an abdominal incision. It may be surmised, however, when a woman normal on physical examination and whose tubes have been proved to be patent fails to conceive though her partner is a perfectly normal man. Even in such, however, relative infertility, loss of the egg-cell during its transperitoneal passage, or very early death of the oösperum, are equal possibilities. Modern research teaches that the ovaries in certain animals are under the influence of two hormones secreted by the anterior lobe of the pituitary gland, and that

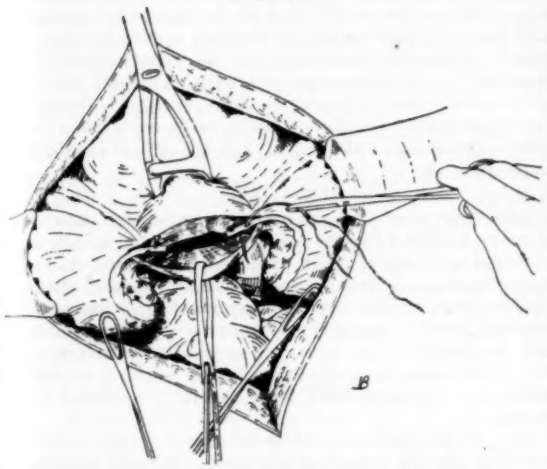
FIG. 3.



Implanting the tubes. Testing the separated tube.

one of these administered experimentally greatly increases the ovulating function of the ovary. Of recent years it has become common practice to treat sterile women by various endocrine extracts in the hope that they will stimulate the ovaries to produce

FIG. 4.



Implanting the tubes. Fixing the tubes into the uterus.

not only "bigger and better" egg-cells, but more of them. Biochemists have succeeded in obtaining these hormones in purity sufficient to give definite results when administered to certain animals, but it is a long cry from rats and mice to human beings, and there is no evidence at all that these extracts produce any effects on women. One reason perhaps is the fact recently stated by an expert worker in this field that adequate dosage of a woman with hormones of proved activity would cost several thousand pounds! Pregnancy sometimes follows the administration of endocrine extracts just as it does after mud-baths, spa treatment, or suggestion, but let us be on our guard against that credulity which we so readily recognise when it is lay but only perceive with effort when it is professional.

Altering the vaginal discharge.—Our knowledge concerning the effect of abnormal uterine or vaginal discharge on the sperm is very imperfect. It is said that a highly acid state of these discharges is inimical, and on that ground frequent and large alkaline irrigations of the vagina are advised. Until some reliable scientific work on this subject is carried out measures of this sort are more or less empirical. They do not, however, do any harm.

Artificial insemination.—The sperms are not naturally injected into the uterus; they find their way of their own accord. The only condition I can imagine in which direct deposition into the uterus would be helpful is when the vaginal discharge is toxic to the sperm but the uterine discharge is not. The great drawback to artificial insemination of the uterus is the infrequency with which it can be carried out. A married couple who only had relations once every six months would probably have to wait a long time before having a child. To my mind a far better procedure is injection of the semen into the upper vagina by means of a syringe. The husband and wife should be instructed how to do this by themselves, so that it can be carried out frequently.

STONES IN THE COMMON BILE-DUCT.*

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THIS lecture is based upon 116 operations (choledochotomies) for stones in the common bile-duct performed by myself during the last 20 years; 61 of these were at Guy's Hospital and 55 in my private practice.

With rare exceptions gall-stones form only in the gall-bladder where the bile becomes very greatly concentrated by absorption. In the course of time they may migrate to other parts, especially into the common bile-duct. But only the smallest stones can pass through the normal cystic duct, whose channel is very narrow—only one-tenth of an inch in diameter—and tortuous from valvulation of its mucosa. For larger stones to pass, the cystic duct has to dilate as a result of chronic inflammatory softening and repeated attacks of colic. Therefore, in the large majority of cases cholelithiasis can be cured by cholecystectomy long before the common bile-duct becomes affected. Jaundice and cholangitis due to gall-stones can be thus prevented, and this is very desirable because operations upon the common duct, especially in the presence of jaundice and infection, are very far more dangerous than removal of the gall-bladder in early cases.

It is curious that many medical men still believe that jaundice is almost a necessary sign of gall-stones, whereas in reality it is a rare and late sign. Only one-fifth of my 666 cases of gall-stones had calculi in the common bile-duct, and by no means all of these had jaundice. Stones may lie in the common bile-duct for years without obstructing enough to cause jaundice—attacks of complete obstruction and colic, if any, being often of short duration. This fallacy too frequently leads to deplorable delay in the diagnosis of gall-stones, and condemns some patients to many years of unnecessary suffering, and allows dangerous complications, especially infection and jaundice, to develop.

Some of these avoidable complications may be mentioned in more detail: (1) Chronic, acute, suppurative, and gangrenous cholecystitis, with perforation causing local or diffuse peritonitis. (2) Chronic septicæmia; portal pyæmia. (3) Jaundice with infective or suppurative cholangitis. (4) Pancreatitis, acute, subacute or chronic. (5) Cancer[1] of the gall-bladder or bile-ducts, which develops in at least 5 per cent. of all cases of gall-stones. (6) Osteo-arthritis. (7) Cardiac degeneration. (8) Cerebral toxæmia, occasionally causing insanity.

Diagnosis.

The diagnosis of stones in the common bile-duct depends chiefly upon the association of repeated attacks of typical biliary colic, with jaundice of an intermittent or remittent type. Rarely is there any enlargement of the gall-bladder, as Courvoisier pointed out many years ago. Occasionally there may be no colic, this being replaced by intolerable nausea, with faintness and perhaps shivering. Sometimes jaundice is absent because the attacks of obstruction are not long enough to cause it. Here van den Bergh's test for bile-pigment in the blood is of great value. Naunyn pointed out that the duration of jaundice

*A Clinical Lecture delivered at Guy's Hospital.

for more than a year is in favour of stone, but I have seen jaundice due to carcinoma at the duodenal papilla last nearly two years. Shivering, with fever and rigors, complicating jaundice and colic, indicates infective or suppurative cholangitis. These attacks often recur and are very suggestive of stones in the common bile-duct, but they have too often been attributed to malaria.

I have known other obstructions of the bile-ducts mistaken for gall-stones, such as :—

(1) Organising blood clot [2]
(2) Small hydatid daughter cyst
(3) Round-worm
(4) Papilloma
(5) Papillary carcinoma
} in the common bile or common hepatic duct.

(6) Carcinoma of the common hepatic duct. Here there is no enlargement of the gall-bladder, which makes it resemble stone in the common bile-duct, especially as it often causes severe pain.

(7) Carcinoma of the head of the pancreas. Chronic pancreatitis. Hydatid cysts, aneurysm, tumours or other things pressing on the common bile-duct. These cause enlargement of the gall-bladder and of the liver.

(8) Carcinomata at or near the duodenal papilla or of the ampulla of Vater have all given trouble in diagnosis ; but with all of these the jaundice is chronic and rarely remittent. With cirrhosis of the liver the jaundice is continuous, although not severe, and the pain is that of peri-hepatitis and not typical biliary colic. The history, when not concealed, and the facial appearance, may be characteristic of cirrhosis of the liver. The jaundice of carcinoma of the liver, acute yellow atrophy, and other forms of toxic jaundice, have been mistaken for that due to stones in the common bile-duct.

Indication for Operation.

When the symptoms and signs point strongly to the presence of calculous obstruction of the common bile-duct, an operation is indicated whenever the condition of the patient allows it, for there is very little hope of cure by medical treatment or by waiting, although the stone sometimes at long last ulcerates through and is discharged into the duodenum.

But it is usually wise to defer operation until the quiet period—i.e., until jaundice and especially fever have abated. Operations upon the common duct are much safer when undertaken in the quiet period, but when colic and jaundice continue indefinitely without remission it is necessary to operate without waiting too long for a quiet period, before the patient has wasted unduly and has become unusually liable to bleed or to become comatose after operation.

Occasionally a stone firmly impacted in the common bile-duct causes sloughing and perforation of the duct with local or even diffuse peritonitis. When the cause of chronic jaundice is uncertain it is generally wise to explore, and I have often been rewarded in such cases by finding one or more stones in the common bile-duct. Moreover, if no stone, but some irremovable cause of obstruction is found, a cholecyst-gastrostomy can be made to overcome the jaundice and the intolerable itching and anorexia which make the patient so unhappy and always shorten his life.

It is very rarely wise to allow many repetitions of biliary colic with jaundice, although it may be reasonable to hold the hand after the first attack in the hope that the only stone has passed and that no more may develop. After every fresh attack spontaneous cure becomes more and more improbable, because common duct stones inevitably and often rapidly increase in size, and become naturally more difficult to pass through the duodenal orifice of the duct, which is only one-twelfth of an inch in diameter. Moreover, more or less septic infection of the ducts and liver frequently follows and leads to serious loss of liver function, with marked increase of the mortality after delayed operation.

Treatment.

MEDICAL.[3]

Although medical treatment rarely if ever cures calculous obstruction of the common bile-duct, it is indispensable and invaluable in relieving biliary colic, which by common consent is one of the worst of all pains. Morphia and atropine soon give miraculous, if only temporary, relief, and are a godsend to patients who have for any reason to wait for a cure by operation. Antiseptic treatment of the biliary tract by hexamine, salicylates, and sulphates is also valuable as a preliminary preparation to operation. Glucose and hæmostatics are also valuable safeguards when the risk of cholæmia or of hæmorrhage are serious in late or neglected cases.

OPERATIVE.

After the most careful preparation of the patient, to make her safer for operation, the abdomen is rapidly explored through a right paramedian incision in the epigastrium, and after a general survey especial attention is given to the liver, biliary tract, and pancreas. Sometimes it is necessary to remove a septic appendix, and frequently it is necessary to deal with stones in the gall-bladder and cystic duct, but nothing is done until the bile-ducts have been carefully palpated for stone.

(1) *Supraduodenal choledochotomy.*—Any stone found in the lower part of the duct is backed into the supraduodenal part of the common duct, where it is fixed, by the left index-finger passed into the foramen of Winslow, until it is removed through a longitudinal incision in a bloodless part of the duct well above the duodenum. A large lead probe is then passed through the duct into the duodenum, and also into the right and left hepatic ducts. Great patience is required to find and to remove all the stones and debris from the ducts, which often have to be cleaned with strips of gauze passed up and down.

Whenever there is reasonable doubt about the presence of a stone in the common bile-duct, an opening must be made into the duct and the passage must be proved to be clear by passing the large probe through the papilla into the duodenum. It should never be forgotten that stones may be present in the common duct for years without causing either dilatation of the duct or jaundice. At my first cholecystectomy I overlooked a small faceted solitary stone in a normal looking common duct. There was no history of jaundice. There were 99 stones in the gall-bladder and cystic duct, and I thought I had done well for the patient ; but she had repeated attacks of biliary colic without jaundice during the next four years, and then another operation was at last accepted and proved entirely and permanently successful.

(2) *Retroduodenal choledochotomy.*—When a stone in the second part of the common duct cannot be backed into the first part it has to be removed by incising the duct directly over the stone after dividing the posterior peritoneum to the right of the second part of the duodenum, mobilising the latter and turning it forwards and inwards. More bleeding often attends this operation and it is more difficult to explore all the ducts satisfactorily.

(3) *Transduodenal choledochotomy.*—In a few cases a stone cannot be dislodged by reasonable force from the lower end of the common bile-duct. Even the passing of the probe fails to push the stone through into the duodenum. Then the transduodenal operation is necessary and generally proves very successful. A longitudinal incision is made directly over the

stone through the anterior wall of the duodenum; then the papilla or duct is incised over the stone, which is removed, and the incision in the front wall of the duodenum is very carefully closed in reverse without narrowing the bowel; two layers of fine catgut sutures are used and a peritoneal flap is brought up from the mesocolon and sewn over the wound. I have never seen any leakage after this operation. After every choledochotomy I insert a fine rubber tube (No. 10 rubber catheter) into the common duct and fix it there with a fine catgut suture. Failure to do this may lead to disastrous leakage of infected bile into the peritoneum.

In one of my cases the lesser sac filled with bile, which I had to evacuate and drain at a second operation. In another case closure of the duct by suture was followed by return of colic, due to organising blood clot within the duct, which required a second operation ten days later. I also insert a larger rubber tube in Morison's pouch; this I remove after two or three days. The catheter becomes loose and is removed after a week or ten days, and the wound rapidly closes without any leakage of bile for more than two or three days.

Prognosis.

Mortality.—In my 116 cases of choledochotomy the death-rate was 12 per cent. Graham and Cole [4] record 42 cases with a mortality of 11·9 per cent. Many of these cases are seen too late for the best results to be obtained. The mortality ought not to be above 5 per cent. if the patients come reasonably early; whereas it is as high as 35 per cent. in late cases with infective cholangitis and perhaps pancreatitis. A mortality of 12 per cent. in these 116 cases compares very unfavourably with that of 1·6 per cent. in my concurrent 434 cases of cholecystectomy. Other bad and late cases, with suppuration in and about the gall-bladder, were treated by cholecystostomy. By a coincidence there were 116 of these with a mortality of 18 per cent.

From these figures it will be seen that I found choledochotomy necessary in 116 out of 666 consecutive cases of gall-stones operated upon by me. Many of the deaths were chiefly due to delay, and could have been avoided by early cholecystectomy.

Ultimate results.—In my experience, recurrence of gall-stones after choledochotomy is very rare, although symptoms of cholangitis sometimes continue or recur. I have not yet seen true recurrence of gall-stones after cholecystectomy, but I have occasionally found stones in the common duct which had been overlooked when the gall-bladder was removed.

Illustrative Cases.

CHOLECYSTECTOMY AND CHOLEDOCHOTOMY.

CASE 1.—A lady, aged 57, gave a history of five attacks of biliary colic during 1913 and 1914. Afterwards she was well for 14 years, but in 1927 the attacks returned and were at first diagnosed as pseudoangina. In 1928 there were three more definite attacks. In February, 1930, she developed right-sided pleurisy. Five days later a typical and severe attack of biliary colic developed. Meanwhile there was a loud rub over the lower half of the right lung. The patient was laid up for weeks, but gradually recovered. On June 3rd a very severe attack of typical biliary colic started at 8 P.M.; an injection of gr. ¼ of morphia was given, but the patient did not sleep all night and had several rigors. Next day there was marked tenderness over the gall-bladder, which was felt. There was no jaundice. The temperature was raised and remittent for five days. Cholecystectomy was advised but the patient preferred to wait. She was ill for some weeks with irregular fever and rheumatism in the shoulders and hands. She lost a stone in weight.

When I saw her for the first time in July, 1930, the liver was somewhat enlarged and the gall-bladder was palpable and tender. There was a moderate degree of jaundice.

Operation, July 17th. Kocher incision. The appendix appeared normal and was left alone, especially as there were stones in the common bile-duct as well as in the gall-bladder, and the patient was very ill. The stomach and duodenum were normal. The gall-bladder was chronically inflamed, thick-walled and shortened, drawing the front edge of the liver downwards and backwards, kinking it. The gall-bladder was very adherent to the front of the duodenum; the adhesions were divided and tied. The common bile-duct was opened above the duodenum and 15 stones were removed from it and the common hepatic duct, a mass of them being impacted in the latter; they were all made of cholesterin; three were withdrawn from the common bile-duct low down, and some from the hepatic ducts. The large probe and scoop were passed through the papilla into the duodenum to dilate the orifice thoroughly. The gall-bladder was very adherent and embedded in the liver; its fundus was shelled out, but a diverticulum extending downwards along the common bile-duct was so very adherent that some of it was left behind because of the danger to the main duct. In all, about 100 stones were removed. A tube was sewn into the common duct, and another large tube drained the kidney pouch. The operation lasted 1 hour and 20 minutes; the patient stood it well and made a slow but complete recovery. She has remained quite well now for over 18 months.

CASE 2.—A man, aged 65, was sent to me in July, 1927. He had had severe kyphosis of the spine since the age of 20, when he was laid on his back for three years. When he was 30 he passed six gall-stones after suffering much from biliary colic. After this he was well for years, but the symptoms returned in 1922, when cholecystostomy was performed and 16 stones were removed from the gall-bladder. A fæcal fistula followed for some weeks and he was very ill. The symptoms returned a year later with more severe colic, dyspnœa, and præcordial pain resembling angina pectoris. I advised operation, but the patient waited until he became worse and jaundice had developed in March, 1929. An operation was performed during a remission. He was a tall, thin man, suffering from bad, rigid spinal curvature, so that his liver was drawn high up into the chest, and was very difficult of access.

Operation, April 10th. Kocher incision; large ventral hernia; a mass of dense adhesions in the right hypochondrium. With difficulty these were separated and the duodenum and stomach and liver identified. A small fibroid gall-bladder containing small calculi was found and used as a tractor, and thus the common bile-duct was traced; it was dilated and thick-walled. No stone could be felt in it until it was opened, when a large amount of pale bile containing debris of stone escaped. On passing the index-finger down, a small stone was felt low down and was removed with the greatest difficulty by the supra-duodenal route. A large lead probe was passed through the duct into the duodenum. The stone, which was a little larger than a pea, had been impacted at the duodenal papilla The operation took a long time—about one and a half hours—and the patient lost a good deal of blood, but his pulse was good at the end of the operation. He made a slow but complete recovery and has remained well for nearly three years.

Conclusions.

Infective inflammation of the gall-bladder is very common, and is difficult to cure medically. It often causes gall-stones, and sometimes cancer, to form in the gall-bladder or bile-ducts.

Timely radical operation has a low mortality, and offers a very good chance of cure. Delay often leads to serious and dangerous consequences. The results of operations upon the gall-bladder and bile-ducts are extremely satisfactory, and compare favourably with those obtained in any other branch of surgery. They will become still more satisfactory and even safer when patients come for operation before serious consequences, such as jaundice and suppuration, have developed.

REFERENCES.

1. Graham, E. A., and Cole, W. H.: Diseases of the Gall-bladder and Bile-ducts, London, 1929, p. 185; Leitch, A.: Brit. Med. Jour., 1924, i., 451; Rolleston, Sir Humphry, and McNee, J. W.: Diseases of the Liver, Gall-bladder and Bile-ducts, London, 1929, p. 698.
2. Rowlands, R. P.: Guy's Hosp. Rep., 1912, lxvi., 219.
3. Hurst, A. F.: Medical Essays and Addresses, London, 1924, p. 207; and Price, F. W.: Text-book of Medicine, 3rd ed., London, 1929, p. 659.
4. Graham and Cole: Op. cit. (ref. 1), p. 438.

INCREASED CARBOHYDRATE IN THE TREATMENT OF DIABETES MELLITUS.

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The vast improvement in the treatment of diabetes is one of the most striking features of the last decade in medicine; this improvement is frequently attributed entirely to the introduction of insulin, and assuredly insulin has been the means of saving innumerable lives and of restoring to full health and vigour many who but for it would have had to look forward to a short life of invalidism and semi-starvation. Even before the introduction of insulin, however, F. N. Allan, who may be regarded as the father of the modern treatment of diabetes, had laid down the general principles which, even without the discovery of insulin, would have revolutionised the management of diabetes and which actually constitute the basis of present-day treatment.

By removing variable proportions of the pancreas of dogs, Allan and his co-workers produced diabetes of varying severity. In a mild case thus experimentally produced they found that, by careful dieting and by keeping the animal in a state of under-nutrition, it was possible to hold the diabetic condition in check. If, however, the animal thus brought to equilibrium were permitted to eat all the food it fancied, the experimentally produced diabetes progressed rapidly to a fatal issue. Given just sufficient islet tissue to deal with the minimal glucose requirements of the animal and presented with that minimum only, the pancreas would carry on; faced with more glucose than it could deal with, the islet tissue rapidly degenerated, and a frank diabetic condition supervened and progressed rapidly to a fatal issue.

Thus was developed the principle of pancreatic rest; islet tissue only just up to requirements may serve its owner so long as it is not overworked; overwork it and it will collapse altogether. Before the introduction of insulin the only known means of inducing pancreatic rest was starvation or under-nutrition. The degree to which these can be pushed is limited and it is, on the face of it, undesirable to starve an already wasted subject; moreover, even in the healthy subject starvation leads to the breakdown of stored fat and rapidly gives rise to ketosis with its attendant evils. None the less, starvation is a valuable means of resting the pancreas; by means of preliminary starvation and thereafter a diet below the actual metabolic requirements it was possible, even before the days of insulin, to retain in reasonable health, albeit in a state of subnormal vigour, numbers of diabetics who would otherwise have early succumbed to their disorder.

Starvation in the treatment of diabetes is not now necessary nor is under-nutrition actually desirable. By means of the judicious use of insulin it is possible to rest the pancreas without recourse to either of these measures. In the past the value of insulin in this respect has not been sufficiently realised. By the time that insulin was introduced, the general dietetic principles of Allan had been so firmly established that insulin was used merely as an adjunct to the dietetic treatment. Preliminary starvation was enforced until the blood-sugar became normal, and the diet was then slowly stepped up until it became evident that the carbohydrate tolerance had been reached. At this stage, and not before, insulin was introduced into the treatment. There was and still is a general feeling that once insulin has been introduced into the management of a case its use must be maintained throughout life. This is far from being so. The early and free use of insulin as a means of securing pancreatic rest brings the case under control quickly and easily and without danger of ketosis; in the milder cases its use may be dropped as the glucose tolerance increases; in all cases the size of the dose necessary at the commencement of treatment always greatly exceeds that on which the case finally becomes stabilised. The use of insulin tends to reduce ketosis; starvation to produce it. On these grounds alone it is preferable to secure pancreatic rest by means of insulin rather than by starvation.

INSULIN TO REDUCE THE LOAD ON THE PANCREAS.

Simple rest, however, does not constitute the whole of the treatment of diabetes; the pancreas rested, and with some of its function restored, must not thereafter be overworked; it is as a means of taking some of the load from the pancreatic islet tissue that insulin has been almost solely used in the past, and its importance in this direction remains undiminished. In the past, however, there has undoubtedly been a failure to take full advantage of the possibilities offered by insulin in this respect.

The diets in use as a result of the work of Allan at the time of the introduction of insulin mostly allowed carbohydrate, protein, and fat in the approximate proportions of 50, 50, and 150. So long as the diet conformed to Woodyate's formula that F should not exceed 2C plus ½P it was considered that ketosis would not develop, and in many instances patients did well on such diets either with or without insulin; in fact, so enormous was the improvement over all previous forms of treatment that for a time it seemed that nothing better could be found. As, however, the potency of insulin was fully realised, there was questioning as to whether the low-carbohydrate-high-fat diets introduced as a result of Allan's work were really the best that could be devised, and the further the inquiry is pushed the more evident it becomes that they are not.

Allan's original work on dogs was done without insulin; he realised that excess of fat in the diet tended to some extent to reduce the tolerance for glucose, but fat in large amounts had to be included in the diet because it offered the only means of providing the necessary calories above those made available by the metabolism of glucose, and of this the amount, whether elaborated from carbohydrate or protein, had to be strictly limited. On clinical grounds it has now become evident that with the intelligent use of insulin strict limitation of carbohydrate is neither necessary nor desirable. It is a matter of experience that on adequate insulin dosage the patient who is not slavishly observant of his diet often does rather better than the one who adheres strictly to the letter of the doctor's word. Patients on a diet just conforming to Woodyate's formula in many instances show a tendency to develop some degree of ketosis—and no diabetic can be regarded as satisfactorily under control who shows acetone in the urine. More free-and-easy patients who exceed their diet in moderation—and when this is the case it is practically always to the carbohydrate ration that the addition is made—may escape acetonuria even though some degree of glycosuria develop, and it is a matter of common observation that the diabetic with a little sugar in the urine feels and actually is in

better health than his fellow who is free of glycosuria but has acetonuria.

These considerations have led within the last few years to a considerable increase in the carbohydrate and decrease in the fat ration of the diabetic. Ever since the introduction of insulin it has been recognised that by its use in sufficient amount it is possible to balance almost any amount of carbohydrate in the diabetic diet. It was, however, widely assumed that any increase in the carbohydrate of the diet would necessitate a proportional increase in the insulin dosage, and the average patient greatly prefers to put up with a low carbohydrate intake rather than to increase the bulk and the number of his daily insulin injections. Experience has shown that the assumption that increase in carbohydrate necessitates a proportional increase in insulin dosage is entirely false. It has been widely held that one unit of insulin may be regarded as approximately sufficient to bring about the metabolism of one gramme of glucose, and within very wide limits this is true enough for the first 15 or 20 units of the dosage. Thereafter, however, it is found that increasingly large amounts of carbohydrate may be added to the diet with only a relatively small increase in the insulin dosage. Thus, after the first 15 or 20 units of insulin, a further 10 may be sufficient to enable the patient to deal with another 30 g. of carbohydrate, while the addition of a further 30 g. of carbohydrate to the diet may only necessitate a further 5 or 10 units of insulin.

Taking advantage of these facts, it is possible to introduce almost any desired amount of carbohydrate into the diet and to diminish the fats accordingly. In America, where meat-eating is apparently regarded as something of a crime and where carbohydrates tend to bulk more largely in the diet than they do in this country, recognition of these possibilities has led to the inclusion of very large amounts—up to 300 and 350 g.—of carbohydrate in the diabetic diet. In certain cases, particularly in growing children, such a régime has had very striking results. It is generally admitted, however, that with such diets the insulin requirements are what would be regarded as large in this country. A dosage of 100 units daily is not unusual, and more frequent dosage is necessary. Highly concentrated insulin is more generally available in America than in this country, so that the actual bulk of insulin required on these very high carbohydrate diets is not excessive; the frequency of dosage, to which the American patient apparently does not take exception, constitutes in this country a distinct objection. None the less there undoubtedly are cases, particularly in children, in which very high carbohydrate diets may be used with distinct advantage.

In this country the average patient is happy on a carbohydrate intake considerably below 300 g. Amounts of from 150 to 250 g. will satisfy most individuals, and by the judicious use of insulin these may readily be included in the diabetic diet.

THE REGIMEN OF THE HIGH CARBOHYDRATE DIET.

In the treatment of a case with higher carbohydrate diet, insulin must be used freely in the early stages; one hundred or more units per day may be required and the doses may have to be given four times in the twenty-four hours—even more frequently if there is any danger of coma. At the onset of treatment, no matter what the state of the patient, the carbohydrate content of the diet should be at least 100 g.; if the general condition is bad this may be given in the form of glucose solution flavoured with fruit juice. If insulin be used boldly and freely in the early stages of treatment, there need be no fear but that it will be possible very considerably to decrease the dose as improvement occurs. It is the aim of the writer, no matter what the size or frequency of the initial insulin dosage, ultimately to reduce it to one dose daily, to be taken in the morning. In many cases this becomes possible, but only when the insulin requirement is at or below 40 units daily. Once brought under control, many patients may be kept so on a single morning dose of insulin of up to 40 units; some patients, however, will not even tolerate this as their single daily dose, and I have never had a patient whom it was possible to keep under control on a single daily dose larger than this. Where the daily insulin requirement is less than 40 units it is usually quite feasible to concentrate the whole of this in the single morning dose, even though the diet contain up to 150 g. of carbohydrate. In such cases it is frequently desirable to arrange the diet so that the patient takes from 10 to 15 g. of carbohydrate in the middle of the morning; this may be taken as half a pint of milk, an ounce slice of bread or four ounces of fruit—all roughly equivalent in carbohydrate content.

In the management of the case it is important to ascertain early in treatment whether the weight of the patient be normal for his age and height. The normals may readily be ascertained from a height-age table. If the weight be above normal, steps must be taken to reduce it, and this may be a matter of some difficulty; to increase it is infinitely easier, but in any case the establishment of the particular diet and insulin dosage optional for any given case is not an easy matter. It is difficult—in fact almost impossible—to carry out treatment in the early stages satisfactorily except in an institution, and every effort should be made to get the diabetic, even the relatively mild case, into some place where the diet can be carefully regulated, the weight followed, and frequent determinations of the blood-sugar made.

Treatment is better commenced in bed. Roughly speaking, the average adult at rest requires from 1000 to 1200 calories daily, and if not overweight the patient may be prescribed a diet providing this amount and containing approximately 100 g. of carbohydrate. Of protein 1 g. per two pounds of body-weight may be allowed, the remainder of the diet being made up of fat. If the patient be above weight the same carbohydrate and protein content is prescribed, but the fat ration is reduced as deemed advisable.

If on admission the blood-sugar is found to be high, insulin is given at once and freely, and the same applies if the blood-sugar rises on the diet. Roughly speaking, if the blood-sugar at the commencement of treatment be above 0·3 per cent., insulin may be started with a morning dose of about 40, a midday dose of 10, and an evening dose of 20 units. As treatment proceeds it may become evident that much larger doses are necessary, and there should not be the least hesitation about giving them, the morning dose always being kept the largest and the midday the smallest. Not until the blood-sugar is consistently within normal limits and the urine free of sugar is the diet increased. It is then raised to approximately 2000 calories with a carbohydrate content of from 125 to 150 g. At this stage the patient will commence to show evidence of hypoglycæmia after some or all of the insulin doses. This is a good sign; a few lumps of sugar are kept by the bedside and the patient is instructed to take one at the onset of symptoms with the nature of

which he is acquainted beforehand. At this stage reduction of the insulin dosage is commenced. The midday dose is first reduced and then dropped, and then the evening dose is likewise reduced and possibly dropped altogether; the patient is allowed up and encouraged to be as active as possible; in hospital he is made to assist in the work of the ward; in the nursing home he is ordered out for a walk twice a day. The diet is now at the same time increased to the full caloric requirement of the subject; for those in sedentary occupations from 2000 to 2200 calories usually suffices, but for manual workers it may be necessary to increase on this; I have found 3500 calculated calories sufficient even for a ploughman in full work.

DISCUSSION.

The higher carbohydrate diet possesses many advantages. It is more palatable and cheaper than the old high fat diet and approaches more closely to the diet in general use in this country. It is a comparatively simple matter to arrange for the diabetic subject a diet requiring no special cooking in the home and which he can select from any ordinary meal table when away. The use of special diabetic foods is not only unnecessary but actually objectionable.

Apart from consideration of cost, palatability, and convenience, it is further advantageous from the standpoint of the general health. The older type of diabetic diet largely depended for its caloric value on the high fat content; as pointed out above, a high fat intake in the diet tends to produce ketosis and also actually has some antagonistic effect on insulin. Further, a high fat intake tends to raise the level of the cholesterol in the blood, and there is ample though possibly not conclusive evidence that a high blood cholesterol is one at any rate of the determining factors in bringing about atheromatous changes in the blood-vessels. Arterio-sclerosis is almost invariable among diabetics of any standing, even those successfully treated on the older high fat diets, and the complications of arterio-sclerosis are among the commonest of the causes of death and disablement of diabetic subjects, treated and untreated alike. Evidence is already collecting that increase of the carbohydrate content of the diet is effective in clearing up the arterio-sclerosis and reducing the blood pressure. By Rabinowitch and his school this is attributed to the lowering of the blood cholesterol brought about by the reduction of the fat intake; Sansum and his co-workers, on the other hand, attribute it rather to the reduction of general acidity brought about by the ingestion of the large amounts of fruit and vegetables included in the higher carbohydrate diets. Whichever view of the matter be correct—and there is probably something to be said for both—it is a fact that such diets tend to produce a fall of the blood pressure and the improvement of arterio-sclerotic manifestations, and that such improvement is associated with a fall in the blood cholesterol and a rise in the pH of the urine. No diabetic patient should be regarded as satisfactorily controlled until the blood cholesterol has fallen below 180 mg. per cent. and the pH of the urine has risen to above 5·5. Sansum would have the urinary pH even higher, so as to be "alkaline to litmus," but such pH readings, though common enough among the herbivorous, are not usual in omnivorous animals.

Rabinowitch continues to lay stress on the necessity for keeping the diabetic subject slightly undernourished. Many diabetics, especially those of advancing years, are overweight, sometimes grossly so at the commencement of treatment, and many up to or below the normal weight at the commencement of treatment tend to become overweight when brought under control on the older high fat diets. In obese patients arterio-sclerosis is almost universal, and the insulin requirements tend to be large and to increase. It is undoubtedly in the highest degree desirable that the diabetic patient should not be permitted to exceed his standard weight, but there is not now the least reason why he should not be permitted a diet ample both to satisfy his appetite and to supply the calories demanded by his daily expenditure of energy, no matter how arduous his occupation.

REFERENCES.

Allan, F. N.: Jour. Amer. Diet. Assoc., 1930, vi., 1.
Nixon, J. A.: Brit. Med. Jour., 1930, i., 326.
Rabinowitch, I. M.: Canad. Med. Assoc. Jour., 1930, xxiii., 489.
Royal Society of Medicine Discussion, THE LANCET, 1931, i., 351.
Sansum, W. D.: Treatment of Diabetes Mellitus, London, 1930.

TUBERCLE BACILLI IN THE BLOOD STREAM IN HUMAN AND ANIMAL TUBERCULOSIS.

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IN view of the conflicting evidence as to the presence of the tubercle bacillus in the blood stream during the progress of tuberculosis, attempts at demonstration and cultivation of the bacillus from human and animal material are here recorded. Three methods of culture have been practised: the culture of the hæmolysed stromata; that of digested blood clot; and direct culture into veal broth. In addition, a small number of guinea-pig inoculations have been made.

CULTURE OF THE HÆMOLYSED BLOOD RESIDUE.

For some years past Löwenstein has been successful in obtaining cultures of tubercle bacilli from the blood stream of cases of active and chronic tuberculosis and renal tuberculosis. His method consists of hæmolysing the blood with acetic acid, treating with sulphuric acid to eliminate contaminations, and washing and culturing the stromata on a synthetic egg medium containing asparagin.[1] He lays stress on strict attention to his technique, and attributes the success of his cultures to the freedom from hæmoglobin and peptone, and the nature of the medium. These results have been confirmed in Vienna by Russew.[2] Further application of this method by Löwenstein and Kren has resulted in the culture of tubercle bacilli from a large number of tuberculides and cases with cutaneous lesions, and a variety of other conditions not previously considered to be tuberculous, such as acute rheumatism and disseminated sclerosis.[3] More recently Oekonomopoulo, Papanikolaou, and Joannides have failed to obtain cultures by this method from 18 cases of advanced tuberculosis,[4] and Unverricht and Dosquet have obtained them in only one out of 91 tuberculous cases.[5] In this country the method has been followed in a modified form by H. Moos Schwabacher, who in a first communication reports a success in pulmonary tuberculosis.[6]

Cultures have been attempted along similar lines from the heart's blood of guinea-pigs experimentally infected with tuberculosis. The animals were killed during the period when glandular tuberculosis was

established and generalised dissemination was taking place. It was thought that this material would be favourable for testing the efficacy of the method.

The guinea-pigs had been infected by inoculation of pathological human material for routine diagnostic or confirmatory purposes. The infecting bacillary strain can be assumed to be the human eugonic type in the majority of cases. The length of time elapsing between inoculation and the date on which the animal was killed varied from 6 to 20 weeks, being generally from 8 to 12 weeks. The extent of disease varied in the different animals, but in all cases dissemination from the local and glandular infection had taken place, and miliary tuberculosis of the spleen and other organs was present in some degree.

The animals were killed by stunning; the thorax was opened, the pericardium slit with sterile scissors, the surface of the heart seared, and blood taken from the right ventricle, while the heart was still beating, in one or more Pasteur pipettes. The post-mortem examination of the other organs was then completed. The blood taken in this way was kept under sterile conditions, and it was not found necessary to treat with sulphuric acid to eliminate contaminating organisms.

In the first attempts, citrated blood was hæmolysed with distilled water and the sediment cultured in a fluid medium.

About 5 c.cm. of blood were pipetted into a centrifuge tube containing 15 c.cm. of 1·5 per cent. sodium citrate in normal saline; centrifuged for five minutes, the supernatant fluid pipetted off, the red cells hæmolysed by 15 c.cm. of sterile distilled water; shaken, centrifuged for ten minutes, the supernatant pipetted off, and fresh distilled water added. By this means a very small deposit of faintly stained, shreddy debris was obtained; this was transferred by pipette to a tube of a synthetic fluid medium to which 10 per cent. of ox serum had been added. After three weeks' incubation, and again after a further period of three to four weeks, the deposit in the broth was filmed and stained by Ziehl-Neelsen.

Cultures were made in this way from 14 guinea-pigs (infected from 51 to 101 days previously, the average length of infection being 74 days); one was rejected owing to the slow growth of a contaminating coccus. The other cultures remained clear; in one case two typical acid-fast bacilli were found in the film; subculture of this tube on to Dorset's egg medium failed to grow. No acid-fast bacilli were demonstrated in the other 12 cultures.

In the next series of six guinea-pigs (infected from 100 to 154 days previously, average length of infection being 129 days), the deposit, obtained in the same way, was cultured directly on to Dorset's egg medium, two slopes being used for each deposit. These were watched during five weeks' incubation; in the absence of naked-eye colonies, films were made at the end of this period and stained by Ziehl-Neelsen; in no case were acid-fast bacilli found.

For the final series, the method follows the modification of Löwenstein's technique adopted by Moos Schwabacher, who has obtained cultures from cases of advanced phthisis in this country.

Approximately 5 c.cm. of blood was taken as before into 10 c.cm. of 1·5 per cent. sodium citrate in normal saline, the red cells spun down by 20 minutes' centrifugation, hæmolysed by transferring to a centrifuge tube containing 25 c.cm. of 3 per cent. acetic acid; after centrifuging for ten minutes the deposit was again treated with a similar quantity of acetic acid and recentrifuged, and the deposit washed twice with distilled water. The stroma deposit so obtained was bulkier than that given by hæmolysis with distilled water, and, in spite of the double treatments of hæmolysing and rewashing, remained dark brown in colour. This was cultured on an egg medium, to which a third of its volume of veal broth containing 5 per cent. glycerin was added before inspissation. The deposit was spread over the surface usually of two slopes, the cultures being incubated in the sloped position for the first night.

The medium used gave a rapid and luxuriant growth of the human tubercle bacilli already cultured in the laboratory.

As a check on the technique of the method used, a positive control was carried out by the addition of 0·1 c.cm. of an emulsion of tubercle bacilli (containing approximately 100,000,000 bacilli by stained count) to 5 c.cm. of freshly obtained guinea-pig's blood. This was treated in the same way as the blood cultures, the deposit being cultured on two slopes of the medium. Naked-eye colonies of growth were not distinguished after six weeks, but on filming tubercle bacilli were readily found in proliferating clumps.

By this method blood from 21 guinea-pigs (infected from 53 to 137 days previously, average length of infection 95 days) was cultured. An occasional culture tube was rejected on account of contamination, and 39 slopes were watched and filmed after 6 to 7 weeks' incubation. In no case were acid-fast bacilli found.

Thus the method of culturing the washed hæmolysed stromata, either in a synthetic fluid medium, on Dorset's egg medium, or on an egg medium enriched by glycerin veal broth, has not been successful when applied to tuberculous guinea-pigs.

CULTURE OF DIGESTED BLOOD CLOT.

It was thought possible that culture of the clots of blood taken from cases of pulmonary tuberculosis for serological tests might yield some positive results. The cases tested were sanatorium patients, usually on admission; thus they were not of an acute or advanced type, but in nearly all instances they were sputum-positive at the time. After some preliminary trials a modification of Jousset's method was adopted.[7]

The clot from 10 c.cm. of blood, from which the serum had been pipetted, was cut up with sterile scissors and placed in a flask; 25 c.cm. of a freshly prepared solution of 1 per cent. pepsin dissolved in 0·5 per cent. hydrochloric acid was added and the mixture incubated at 37° C. for four hours, being shaken at intervals. Digestion of the clot was complete in most cases after this period, though a fairly bulky brown sediment remained. The fluid was then centrifuged; the supernatant pipetted off, and the deposit treated with an equal volume of 10 per cent. sulphuric acid for ten minutes. This deposit was spread directly on to the surface of Dorset's or Petroff's egg medium, four slopes being used for each deposit. Cultures were incubated and were examined microscopically after 6 to 10 weeks.

As a test of the method, 0·5 c.cm. of an emulsion of tubercle bacilli was added to 5 c.cm. of fresh blood, which was allowed to clot, and treated in the same manner as the patient's blood. Growth of tubercle bacilli was found on filming the cultures, although naked-eye colony formation could not be observed on the primary cultures. Difficulty was experienced in obtaining cultures free from contamination, owing to the use of pepsin, which cannot be sterilised. A certain proportion of tubes had therefore to be rejected. Finally, 83 slopes were filmed from 30 cases. In none of these were acid-fast bacilli found.

VEAL BROTH CULTURES.

Dreyer and Vollum report that growth of tubercle bacilli was obtained from the heart's blood of infected guinea-pigs by direct culture of small quantities of blood in the depths of veal broth tubes.[8] In about 90 per cent. of guinea-pig autopsies they are able to demonstrate either a scanty or an abundant growth of bacilli in the primary blood clot bouillon culture. These results have been obtained while working with three laboratory strains of the tubercle bacillus, of which one was B C G; while positive results occur regardless of the virulence of the strain, the bacillæmia is less easily demonstrated in animals which showed greater powers of resistance.

The greater number of guinea-pigs here investigated have been infected by the inoculation of human pathological material for routine diagnosis or confirmatory purposes. Thus the infecting strain is one that has not previously been isolated on artificial culture.

The animals were killed from 50 to 113 days after inoculation. The average length of life after infection was 83 days. In obtaining the blood, in culturing in veal broth tubes, and in the technique of making and staining the films, Dreyer and Vollum's method has been followed.

About 0·5 c.cm. of blood taken immediately after death was run into veal broth culture tubes containing 10 c.cm. of medium, and incubated for one to two months. With a platinum spade, part of the clot was detached, spread in a thick film, stained by Ziehl-Neelsen, being counter-stained with picric acid and the decolorisation assisted by washing with equal parts of acetone and alcohol.

Sixty-three guinea-pigs suffering from glandular and generalised tuberculosis have been examined. Twelve of the animals had been inoculated with a laboratory strain of tubercle bacillus, and had received injections of tuberculin. In one of these cultures typical acid-fast bacilli were found growing luxuriantly in the blood clot and in the broth; a leptothrix was also present as a contamination. The remaining 51 animals had been inoculated with fresh human pathological material; the strain therefore had not previously been subjected to artificial culture. No growth of bacilli was found in films, but isolated bacilli were found in four; in none of these was more than five possible bacilli found, after searching for one to two hours.

From 27 of these veal broth tubes subculture was attempted by spreading a portion of the clot on to Dorset's egg slopes. These were incubated for 2 to 3 months, the cultures being filmed after 6 to 12 weeks. In two slopes slow growth of tubercle bacilli was found to have taken place on microscopic examination after 2½ months. A few other blood cultures were rejected on account of contaminations, and are not included in this series. Thus from the 63 guinea-pigs three cultures of tubercle bacilli have been obtained. It is suggested that my failure to obtain results comparable to those of Dreyer and Vollum may be due to my having used diverse infecting strains instead of stock strains from the laboratory.

ANIMAL INOCULATION.

The most reliable method of demonstrating the presence of a small number of tubercle bacilli in a bulky material is generally considered to be by animal inoculation; though it is a question whether, if the bacilli be very few, they may not fail to cause infection. Striking variations have been reported in the frequency with which the demonstration of tubercle bacilli from the blood stream can be effected by the method of guinea-pig inoculation.[9] Except in cases of generalised miliary tuberculosis, results have often not been consistent with our general conception of the probable presence of bacilli in the blood stream during tuberculous infection. Thus, Distaso, working in this laboratory in 1921, found negative results in cases of pulmonary tuberculosis with pyrexia, and in surgical tuberculosis, while from 13 patients with chronic ambulatory afebrile phthisis, nine of the inoculated guinea-pigs developed tuberculous lesions and two others doubtful lesions.[10]

In this series inoculations have been made from 16 patients, from 4 to 10 c.cm. of blood from an arm vein being added to an oxalate tube, and injected intraperitoneally into guinea-pigs as soon as practicable. In some cases this was followed by the formation of a slough, at the site of inoculation, which healed in due course. One animal died ten days after inoculation; no macroscopic changes were detected post mortem, and it must be assumed that death was due to a late toxic effect of the blood absorption.

The cases were chosen from their clinical aspect as being most likely to show the dissemination of tubercle bacilli by the blood stream. The remaining 15 cases can be grouped thus:—

Group I.—Five cases of extensive bilateral pulmonary tuberculosis, all doing badly, two being in the last stages of the disease; one suffering from a dactylitis in addition, and another from a tuberculous eye condition.

Group II.—Four cases of acute phthisis, of more recent origin, rapidly becoming worse.

Group III.—Three cases of chronic pulmonary tuberculosis, suffering from metastatic joint disease.

Group IV.—Three cases of "surgical" joint tuberculosis. In these cases the blood was centrifuged, the plasma being used for other investigations and the red cell deposit being inoculated.

DETAILS.

Case.	Amount injected (c.cm.).	G. P. No.	Survival period in weeks.	Result.
GROUP I.				
Miliary tub. of lungs with dactylitis ..	6	2244	12. D.	Negative.
Advanced pulm. tub., two years' duration..	4	2325	9. K.	,,
Advanced pulm. tub. ..	5	1815	10½. K.	,,
Advanced pulm. tub., ischio-rectal abscess, and tub. eye ..	4	2246	19. K.	,,
Advanced pulm. tub., two years' duration..	8	2326	9. K.	Positive.
GROUP II.				
Acute pulm. tub., four months	4	2327	9. K.	Negative.
Acute pulm. tub. ..	4	1816	10½. K.	,,
Acute pulm. tub., early spinal caries ..	3	2245	19. K.	,,
Acute pulm. tub., onset after pregnancy ..	4	2112	26. K.	Negative.*
GROUP III.				
Pulm. tub. with spinal caries	8	2243	19. K.	Negative.
Ditto	6	2114	26. K.	,,
Pulm. tub., with tub. wrist	10	2113	26. K.	,,
GROUP IV.				
Tub. hip; cells ..	4	1942	12½. K.	Negative.
,, ,, ,, ..	4	1941	12½. —	No sign of infection.
,, knee; ,, ..	4	1940	50. K.	Negative.

D. = died; K. = killed; * old septic abscess of spleen.

Of the guinea-pigs from Group I. cases, one died after 12 weeks; post-mortem examination revealed no lesions to account for the death. Three remained well, and were killed after 9 weeks, 10½ weeks, and 19 weeks respectively; thorough post-mortem examination showed no lesions. One guinea-pig, which had received 8 c.cm. of blood from a male case of advanced pulmonary tuberculosis of two years' standing, developed enlargement of the inguinal glands. It was killed nine weeks after inoculation, and presented caseating glandular tuberculosis of inguinal, abdominal, and tracheo-bronchial glands with tuberculosis of the spleen and scattered miliary tubercles in the lungs. Acid-fast bacilli were demonstrated in the caseous glands; and afterwards by culture.

The guinea-pigs from Group II. were killed after 9 weeks, 10½ weeks, 19 and 26 weeks respectively. Post mortem there was no evidence of tuberculosis. The animal surviving for 26 weeks had an old necrotic polymorphonuclear abscess of the spleen of which histological and bacteriological investigation failed to reveal the cause.

The three animals from Group III. were killed after 19 weeks, 26 weeks, and 26 weeks respectively; two of the animals from Group IV. were killed after

12½ weeks and 11½ months respectively. All were carefully examined post mortem, and no evidence was found of tuberculosis. The other guinea-pig from Group IV. showed no evidence of infection after three months, the glands were normal and the weight increasing; it was considered negative, and was utilised for another purpose. The details are set out in the Table.

SUMMARY.

1. On the principle of Löwenstein's technique, cultures were made from the heart blood of 40 tuberculous guinea-pigs. Acid-fast bacilli failed to grow.

2. From 30 sanatorium cases of pulmonary tuberculosis, blood clot was digested with pepsin by the method of Jousset; after sterilisation with acid, cultures of the residue on egg medium failed to grow tubercle bacilli.

3. From small quantities (0·5 c.cm.) of heart blood of 63 tuberculous guinea-pigs cultured in veal broth by the method of Dreyer and Vollum, one primary positive culture was obtained, and in two cases subcultures on egg medium were successful.

4. Blood from 15 tuberculous patients has been injected into guinea-pigs. One animal, inoculated from a case of advanced pulmonary tuberculosis, developed glandular and generalised tuberculosis. The other 14 proved negative.

I am indebted to the Medical Research Council for a part-time grant; I wish to thank Dr. W. Davies and Dr. A. Brownlee for allowing me access to their cases; Prof. G. Dreyer and Mr. R. L. Vollum, Ph.D., for a personal interview; and Prof. S. Lyle Cummins and Dr. W. H. Tytler for help and advice.

REFERENCES.

1. Löwenstein, E.: Münch. med. Woch., 1930, lxxvii., 1662.
2. Russew, R.: Wien. Arch. f. Inn. Med., 1930, xx., 231.
3. Löwenstein, and Kren, O.: Wien. klin. Woch., 1931, xliv., 405.
4. Oekonomopoulo, N. B., Papanikolaou, B., and Joannides, G.: Zeits. f. Tuber., 1932, lxiii., 341.
5. Unverricht, W., and Dosquet, S.: Ibid., p. 338.
6. Schwabacher, H. M.: THE LANCET, 1931, i., 1130.
7. Bull. de l'union internat. contre la tuberc., 1924, i., 81.
8. Dreyer, G., and Vollum, R. L.: THE LANCET, 1931, i., 1015.
9. Ibid., 1921, ii., 193.
10. Distaso, A.: Tubercle, 1921, ii., 251.

THE CULTIVATION OF THE TUBERCLE BACILLUS

AND THE OCCURRENCE OF TUBERCULOUS BACILLÆMIA.

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THERE has always been difficulty in obtaining a primary growth of the tubercle bacillus from pathological materials, such as sputum, pus, and urine. Corper [1] described a potato medium, on which he claimed to be able to grow the tubercle bacillus with some degree of ease, about five weeks elapsing before the appearance of visible growth, and Corper and Uyei [2] reported successful results with the same medium. Cunningham and Cummings,[3] using this medium, have obtained 14·8 per cent. more positive cultures than positive direct smears. I have used this medium since its introduction, and also more recently that used by Huth and Lieberthal [4]—the Hohn egg medium.

In the investigations described below, the following minor alterations and additions have been made in technique.

In using Corper's medium, the wool plugs are always waxed with paraffin to prevent evaporation and subsequent drying of the medium. In the preparation of the egg medium one sterile flask, roughly graduated, is used throughout; and the tubes are covered with rubber caps instead of waxing. With both methods sulphuric acid is used to kill organisms other than the tubercle bacillus; the strength may be between 5 per cent. and 15 per cent., but 15 per cent. acid must be used when dealing with fæces. After 30 minutes' sulphuric acid treatment, either at room temperature or at 37° C., the emulsion is centrifuged and the deposit very carefully washed with sterile normal saline and recentrifuged before the medium is inoculated with the deposit. It was found experimentally that if the saline washing is omitted the tubercle bacillus will only grow very slowly after contact with 15 per cent. and 10 per cent. sulphuric acid; and even after contact with 6 per cent. and 5 per cent. sulphuric acid, growth is not so rapid as when careful washing is adopted.

THE POTATO MEDIUM.

The efficiency of the potato medium was tested on 66 specimens, four tubes being inoculated from each specimen. In 35 of the 66 specimens tubercle bacilli had been found in direct smears, and a further 11 specimens were proved tuberculous by guinea-pig inoculation. None of the 20 specimens which gave negative results in direct smears and in the guinea-pig gave positive results in culture. Of the 11 specimens which were negative in direct smears but positive in the guinea-pig, only one gave a successful culture; with two others the cultures were spoilt by early growth of contaminants, and the remaining eight cultures were sterile. Of the 35 specimens positive in direct smears, 7 gave successful cultures; with 10 the cultures were spoilt by contaminants; and the cultures of 18 remained sterile. From a total of 46 specimens proved by other methods to contain tubercle bacilli, successful cultures were obtained with 8; and tubercle bacilli were never isolated in culture when other methods had failed. Subcultures on the potato medium were uniformly successful, growth appearing between the tenth and seventeenth days. Details of the specimens giving successful cultures are shown in Table I.

TABLE I.

Case.	Material.	No. of days for growth to appear.	Direct smears.	Case.	Material.	No. of days for growth to appear.	Direct smears.
1	Sputum.	66	+	5	Sputum.	51	+
2	Urine.	55	+	6	Sputum.	27	+
3	Sputum.	30	+	7	R. ureteric urine.	41	+
4	Pus.	57	+	8	Pus.	44	−

In specimen 8 in which no bacilli were found in direct smears, a guinea-pig inoculated with the same material died with tuberculous lesions four days before growth was detected on Corper's medium, though the egg medium (Case 1) had shown growth three weeks earlier.

THE EGG MEDIUM.

The efficiency of the egg medium was tested on 34 specimens, four tubes being inoculated from each specimen. In 17 of these specimens, tubercle bacilli had been found in direct smears, and a further seven specimens were proved to be tuberculous by other methods. None of the 10 specimens which gave negative results in direct smears and in the guinea-pig gave positive results in culture. Of the 7 specimens proved to be tuberculous by methods other than direct smear examination, 4 gave positive cultures and 3 were sterile. Of the 17 specimens positive in direct smears, 8 gave successful cultures, 3 cultures were spoilt by contaminants, and 6 remained

sterile. From a total of 24 specimens proved to be tuberculous, successful cultures were obtained in 12; and tubercle bacilli were never isolated in culture when other methods had failed. Subcultures on the egg medium were uniformly successful, growth appearing between the seventh and tenth days. Details of the specimens giving successful cultures are shown in Table II.

TABLE II.

Case.	Material.	No. of days for growth to appear.	Direct smears.	Case.	Material.	No. of days for growth to appear.	Direct smears.
1	Pus.	23	−	7	Sputum.	23	+
2	Pus.	53	+	8	Pus.	35	+
3	Sputum.	31	+	9	Pus.	25	+
4	Sputum.	30	+	10	Urine.	28	−
5	R. ureteric urine.	41	+	11	Pus.	68	−
6	Sputum.	41	+	12	Pus.	18	−

With this medium all the specimens in which cultures failed to give any growth despite presence of bacilli in direct smears were sputum specimens. Uniformly successful cultural results were obtained with positive pus and urine specimens in the absence of contamination.

At times over the surface of the medium, especially at the lower end of the slope, will be seen a reddish-coloured growth, which will be found to be composed of bacilli, resembling the tubercle bacillus but somewhat thicker. These organisms are not alcohol-fast, although at times some of them may be acid-fast. This growth may be obtained in uninoculated tubes, and may only appear if the tubes are kept at room temperature for two or three days and then incubated. The bacillus is easily distinguishable from the tubercle bacillus. It is suggested that before use on the day following the preparation of the medium the slopes should be heated to 70° C. for half an hour. In practice this procedure has been found very satisfactory.

BLOOD CULTURE.

Löwenstein [5] has succeeded in culturing the tubercle bacillus from the blood of patients with tuberculous lesions and also from patients with other diseases, such as disseminated sclerosis, using a special egg medium. I have similarly attempted blood culture using the following techniques: Löwenstein uses citrated blood and acetic acid, and I have followed this practice, but have always used the sulphuric acid treatment, as for sputum, before inoculating Hohn's egg medium. I have also treated a similar quantity (10–12 c.cm.) of citrated blood after centrifugalisation with sterile distilled water instead of the acetic acid. I have found this latter method superior to the other, in that there is less final deposit, as in every case all the deposit is used in inoculating the medium. It was also found that in the control experiments (see below) the deposit obtained by this latter method always grew a few days before the former.

The efficiency of the egg medium for blood culture was first tested by mixing some tuberculous sputum—shown by direct smears to contain tubercle bacilli—with blood from a healthy adult, and treating the whole in exactly the same manner as the blood alone would have been treated. Growths of tubercle bacilli were obtained, and in one case actually some few days before growth had taken place from the sputum alone. Similarly tubercle bacilli from a primary culture were added to blood, and treated as above, and all yielded positive cultures.

In all 25 blood cultures from different individuals have been performed and not one positive culture has been obtained. Of these 25 cases, 15 were from patients with tuberculous lesions. There were 11 cases of pulmonary tuberculosis, one of miliary tuberculosis, one of renal tuberculosis, one patient with Pott's disease, and one with tuberculous meningitis. The other 10 comprised eight cases of disseminated sclerosis and two of lymphadenoma. The diagnosis of all these cases was established as definitely as possible by pathological as well as by clinical investigations. Microscopic as well as macroscopic examination was performed before a culture was pronounced positive or negative; and all cultures were kept at least three months, some even being kept five months, before being pronounced negative.

Löwenstein [5] obtained 148 positive blood cultures from 304 tuberculous patients, whereas I have not obtained one positive result on a medium which, under the conditions of my control experiments, was found to be efficient and which also gave some 50 per cent. positive results from other pathological materials. Neither have other diseases yielded any positive cultures, although Löwenstein [5 6] obtained growths of tubercle bacilli from such conditions as disseminated sclerosis (17 out of 40 cases) and rheumatism (21 out of 21 cases). Dreyer and Vollum [7] have cultured blood from guinea-pigs dying with tuberculous lesions and have obtained positive results in 91·4 per cent. of cases. Bingold [8] obtained three positive blood cultures from 43 cases; Jontofsohn [9] obtained three positive results from 41 cases of lung tuberculosis and nine cases of surgical tuberculosis, and Moos Schwabacher [10] obtained one positive result from a case of pulmonary tuberculosis. Muggia [11] obtained negative results in four cases of pulmonary tuberculosis and five cases of acute rheumatism; and Favero [12] similarly obtained negative results from 40 cases; he also controlled his cultures with guinea-pig inoculations, all of which were also negative.

SUMMARY.

Attempts to cultivate the tubercle bacillus from pathological materials on Corper's potato medium and Hohn's egg medium are described. The egg medium yielded more than twice as many positive cultures as the potato medium, and a positive culture has only been obtained in about 50 per cent. of cases in which the tubercle bacillus was demonstrated by direct examination or guinea-pig inoculation.

Blood culture was performed in cases of tuberculosis, disseminated sclerosis, and lymphadenoma, and in no case was a positive result obtained.

I wish to thank Dr. E. ff. Creed for his continued assistance, and also the staff of King's College Hospital for allowing me to make use of their cases.

REFERENCES.

1. Corper, H. J.: Jour. Amer. Med. Assoc., 1928, xci., 371.
2. Corper, and Uyei, N.: Amer. Rev. Tuberc., 1927, xvi., 299.
3. Cunningham, J. S., and Cummings, P. L.: Jour. Lab. and Clin. Med., 1930, xv., 572.
4. Von Huth, T., and Lieberthal, F.: Surg., Gyn., and Obst., 1930, l., 985.
5. Löwenstein, E.: Münch. med. Woch., 1930, xxxix., 1662.
6. ,, ,, : Ibid., 1931, xxvi., 1080.
7. Dreyer, G., and Vollum, R. L.: THE LANCET, 1931, i., 1015.
8. Bingold, K.: Beit. z. Klin. d. Tuberk., 1928, lxviii., 734.
9. Jontofsohn, K.: Zeit. f. Tuberk., 1931, lxi., 35.
10. Schwabacher, H. M.: THE LANCET, 1931, i., 1130.
11. Muggia, A.: Soc. Internaz. di Microbiol. Boll. Sez. Italiana, 1931, iii., 181.
12. Favero, R.: Ibid., 1931, iii., 188.

CLINICAL AND LABORATORY NOTES

SIMULTANEOUS DISAPPEARANCE OF GALLOP RHYTHM AND BUNDLE BRANCH BLOCK.

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AND
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THE following case is interesting and unusual, for at first it illustrated the association of gallop rhythm with bundle branch block, and later the disappearance of both of these at the same time—suggesting that the gallop rhythm was due to the bundle branch block.

The patient had syphilis when aged 25, and was thoroughly treated with mercury and iodides. He married two years later and had five children, who were apparently healthy, and three who died young, these not being the three eldest. He was a heavy smoker and drinker, admitting to 8 pints of beer daily and 4 oz. of tobacco a week. In spite of this he made a good recovery from pneumonia at the age of 41.

At 50 he took to easier work as a caretaker; he had already started to put on weight and to be a little short of breath. Six months later while in bed he vomited a large amount of dark congealed blood. This was attributed to cirrhosis of the liver, and he reduced his consumption of alcohol very considerably.

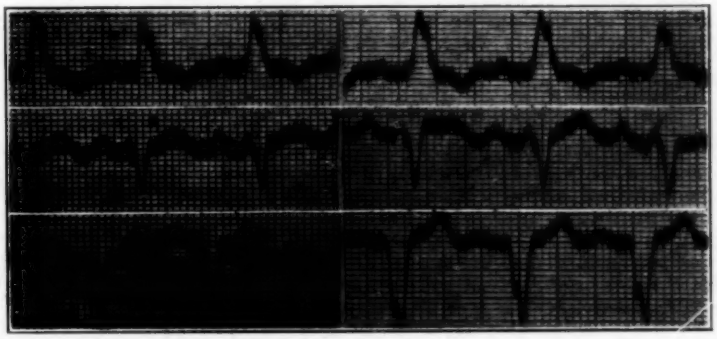
He was first seen by us in May, 1931, when he was 52. During the previous two years he had increased in weight from 11½ st. to 13 st., and had become short of breath on exertion. During the previous six weeks he had begun to complain of attacks of pain represented by a choking feeling in the throat, when he had to take off his tie and collar. In one attack in bed he awoke with a choking sensation and felt he was going to die. Two attacks, one while in bed and one while walking, were specially severe.

On examination his heart was much enlarged, mainly to the left (orthodiagram 17 cm.), and the aorta was considerably dilated without any local aneurysm; his blood pressure was 210/130; the aortic second sound was not clear, but there were no murmurs. He had well-marked gallop rhythm, and a flick could be felt on palpation at the apex corresponding to the third sound of his gallop rhythm. An electrocardiogram showed typical right bundle branch block. His Wassermann reaction was negative. He was seen again several times, the gallop rhythm remaining unchanged; the electrocardiogram on two occasions showed no difference in the degree of bundle branch block (Fig. 1, A and B). He was given iodides, but not in large doses.

On July 10th, the gallop rhythm persisting unchanged, he was allowed to start work, for this was extremely light with no physical exertion, and he felt that otherwise he might lose his position altogether. His blood pressure was 190/120. He only managed to work for nine days, and then had an attack of orthopnœa at night with the choking feeling lasting most of the time for eight hours. He sweated a lot, and again thought he was going to die.

In spite of this, when he came to hospital on August 7th gallop rhythm was not noticed, the flick was not felt on palpation over the apex, and, to our surprise, the electrocardiogram showed no bundle branch block, there being only left ventricular preponderance with the T wave inverted in lead I. and slightly inverted in lead II. (Fig. 2, A). His blood pressure was 180/130.

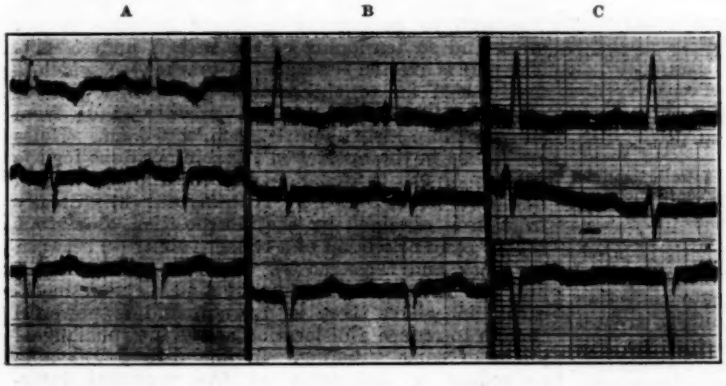
FIG. 1.



He returned to work in September, and when next seen had been at work a month. He felt better and was able to walk a mile with less dyspnœa. There was no gallop rhythm, and his electrocardiogram was similar to that in August, but T I. was less deeply inverted, and T II. was flat (Fig. 2, B).

In December, and in February, 1932, nine months after he was first seen, he was at work and was again rather better, though he had been in bed once for a few days with a slight recurrence of pain. The first sound was almost clear; there was no gallop rhythm, and no bundle branch block in the electrocardiogram; the T wave in lead I. was again better, and now only just inverted (Fig. 2, C). There was no significant change in his orthodiagram, and the blood pressure on the last three occasions had been 190/130, 210/130, and 220/125.

FIG. 2.



Bundle branch block has often been given as one cause of gallop rhythm, but we are not aware of any case where the disappearance of gallop rhythm has been found with a change from bundle branch block to normal conduction. In this case the note about the disappearance of gallop rhythm was made before his electrocardiogram was taken. It is possible that the whole history represents a small coronary thrombosis in a patient with high blood pressure, the bundle branch block and gallop rhythm being a temporary result of this, but the clinical history is not at all suggestive of this. The subsequent changes in the T wave in lead I. would certainly support this view, but it was not the original diagnosis, and

we had assumed that he was a patient with permanent sclerotic changes in the heart, and that his bundle branch lesion was likely to be permanent.

A CASE OF PORTAL CIRRHOSIS.

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PHYSICIAN, RUTHIN CASTLE.

A medical man, aged 47, had lived for a long time in the East. He was known from boyhood for his abnormally large appetite, being fond of highly spiced and seasoned foods; he was a heavy beer-drinker as a student, he drank a good deal of whisky during the war, and for the last three years he had been "doing two men's work and taking stimulants to keep going." From 1927–1929 he had chronic infection of frontal sinuses and antra and in October, 1929, had an acute attack of frontal sinusitis, culminating in spontaneous discharge of pus (*Staphylococcus aureus* on culture); there had been similar attacks of varying severity every 10 to 12 weeks since. Lately these attacks had been accompanied by increasing colic and tympanites, finally requiring morphia. About the middle of April, 1931, he noticed slowly increasing abdominal distension and in June tapped himself and withdrew 22 pints of normal ascitic fluid; the self-tapping was regularly repeated at five to seven days interval. A big hæmatemesis followed third tapping and a smaller one two days later. He lost 2½ st. in weight, and on admission to hospital complained of distension and a constant dull abdominal ache, most marked over liver, only relieved by tapping.

Examination.—Colour poor, emaciated, weight 8 st. 9 lb. (normal 11 st.). Circulatory system: B.P. 130/100, pulse 100, heart sounds clear. Blood: Hb. 75 per cent., red cells 4,100,000, and white cells 11,600 per c.cm.; differential count, polymorphonuclear leucocytosis; W.R. negative; blood-sugar, non-protein nitrogen, cholesterol, icteric index and van den Bergh reaction normal; blood sedimentation rate greatly increased at 130 mm. per hour. Nervous system normal. Respiratory system normal except for scattered moist sounds both bases. Alimentary system: tongue coated. Abdomen: distended with fluid, marked thrill; liver palpable, not tender, no nodules felt. Urine: normal except for trace of bile-salts occasionally. Fæces: occult blood present, occasional mucus; culture negative; no amœbæ seen. X ray examination: head sinuses clear. Barium meal: duodenal cap rigid and deformed, bowel as a whole shows evidence of outside pressure.

Diagnosis.—Cirrhosis of liver with perihepatitis and possible mild colitis.

Progress.—Gradually downhill. Tapping necessary every five to seven days and yielded a normal ascitic fluid. Within a couple of hours of tapping a grating over the liver could be heard and felt which disappeared as the fluid reaccumulated. Appetite improved and bowels acted copiously after tapping, the largest stool passed weighing over 26 oz. Leucocytosis increased to 18,000 and pain became peritoneal shortly before death, which took place four months after first tapping.

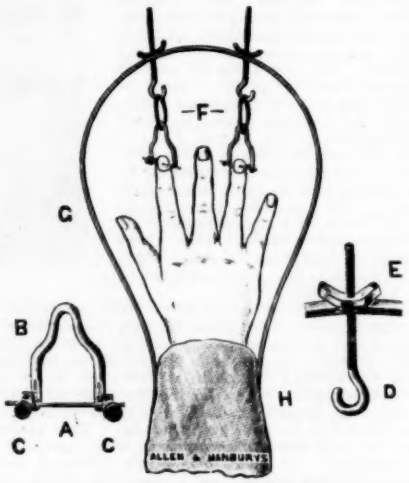
Post-mortem examination.—Liver small, tough, granular on section with a thickened capsule; pancreas firmer than usual; other organs fairly normal except for dilated veins at cardiac end of œsophagus.

Comments.—(1) A case of portal cirrhosis is briefly described in which the onset of severe symptoms came shortly after a repeated acute infection. (2) The action of alcohol per se in producing cirrhosis is debatable; it is suggested in this case that the detoxicating power of the liver was primarily weakened by alimentary excesses and bacterial poisoning. (3) Paracentesis was performed 22 times in all, 11 times by the patient himself and in such unlikely places as hotel bedrooms and bathrooms on board ship. (4) The amount of appetite and the size of the motions depended entirely on a mechanical factor, the intra-abdominal pressure. (5) Contrary to general custom, support for the abdomen by a binder, during and after tapping, was refused as it increased pain and discomfort.

NEW INVENTIONS

AN APPARATUS FOR THE TREATMENT OF FINGER FRACTURES BY SKELETAL TRACTION.

The application of skeletal traction is now in common use for treating fractures of the long bones. The method is equally applicable to fractures and dislocations of phalanges of the hand and of the metacarpals, although it involves the use of some specialised apparatus. The illustration shows a simple and inexpensive method for applying traction to the fingers. The traction appliance consists of a short length of steel wire (A), which transfixes the terminal phalanx from front to back through the nail; rustless steel wire, 0·8 mm. thick, is suitable for the purpose. A straight needle can be employed instead of the wire, but on account of the temper



of the metal there is a risk of breakage. The wire is held in a strut (B), which is made out of stout brass wire. Milled screws (C C) hold the wire firmly. The pull to be exerted in finger fractures is not great and so tensioning of the wire is unnecessary. The pull is exerted through the bracket (G), which is firmly held on to the forearm by a light plaster case (H). The bracket is conveniently made from an aluminium strip about 1·25 cm. × 0·5 cm. Holes are drilled in the bracket in suitable positions for the passage of the threaded hook (D). The position of this hook is controlled by butterfly nut (E). Steady traction is obtained by the interposition of a stout rubber band or section of a rubber tubing (F) between the hook and the strut (B). Such an appliance will pull out any recent fracture of a phalanx or metacarpal in which there is overlap, and is powerful enough to reduce a dislocation at the interphalangeal joints of some standing. In one case I was able to reduce a dislocation at the proximal interphalangeal joint which had been present for seven weeks.

The appliance has been made for me by Messrs. Allen and Hanburys, Ltd., Wigmore-street, London, W.

C. Max Page, M.S. Lond., F.R.C.S. Eng.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

AT a meeting of this section held on April 26th, the chair was taken by Dr. H. MORLEY FLETCHER, the President, and Dr. S. H. COOKSON read a paper on the size and shape of the

Heart in Thyroid Disease.

Opinion, he said, was much divided on whether the heart was or was not enlarged in disorders of the thyroid gland in which the secretion was excessive or abnormal. He would, however, show radiographs proving that the heart was often enlarged in goitre, and that it had a characteristic picture. This picture included: (1) convexity of the pulmonary arc instead of concavity—filling out of the pulmonary bay; (2) elevation of the aortic knob; (3) straightening of the left border, due to a combination of (1) with some enlargement to the left. In the result the heart became rather ham-shaped. In a girl of 16, with goitre symptoms of only two months' duration, the aortic knob was as high as the clavicle and the pulmonary bay convex, although there was no enlargement. Other young subjects showed these signs together with enlargement. In severe cases gross enlargement might be seen, but his series gave no support to the view that enlargement was mechanically produced by pressure of the goitre on the vessels. Radiographic evidences of heart failure were prominence of the superior vena cava, effusion at the right base, and congestion of the lung roots.

In mitral stenosis the pulmonary arc might be developed to an extreme degree and below it might be seen a second bulge, due to the conus arteriosis. Moreover, the aortic knob tended to be unduly small and there were often dense lung roots without any congestive failure. These points distinguished stenosis from the goitre heart, which did not show such an extreme pulmonary arc or any conus bulge and in which the aortic knob was unaltered in size and the lung roots were only dense in the presence of heart failure.

The cause of goitre heart might be the greater volume carried by, and the greater pulsation of the great vessels; the weaker pulmonary arch would give way before the aorta.

The PRESIDENT asked for further details of the causation.

Dr. J. PARKINSON said that these changes were found in a fair proportion of cases of hyperthyroidism and it was remarkable that the hearts of young people should be so affected. It had been stated that the lung fields were clearer in goitre than in the normal case, but others thought this was due to the emaciation. In mitral stenosis the lung areas would be more shadowed.

Dr. COOKSON, in reply, said that measurements had shown that the pulmonary artery was actually dilated. Some German workers had suggested that the prominence of the pulmonary artery was entirely due to enlargement of the right ventricle. He did not think the lung fields were really any clearer than normal in goitre.

Dr. ADOLF SCHOTT (Bad Nauheim) read a paper on the

Respiratory Changes of Blood Pressure.

These changes, he said, consisted in a decrease in the amplitude of the pulse during inspiration and an increase in expiration. There were three forms of pulsus paradoxus: (1) the extrathoracic, which had no clinical importance; (2) the mechanical, due to adhesions between the heart and neighbouring structures; and (3) the dynamic, which was the subject of his paper. He described a number of experiments on animals and patients, particularly a method of direct registration, as a result of which he had found no connexion between pulsus paradoxus and latent or inherent weakness or atonia of the heart muscle. A pulsus paradoxus was found, however, over a wide range of pressures, in emphysema, even in very early cases where the diagnosis was only radiological. It was found also in artificial pneumothorax. These results could be explained by the fact that the intra-alveolar respiratory pressure changes were markedly increased and reacted on the pulmonary vessels. The practical conclusion was that pulsus paradoxus might indicate increased resistance in the bronchial and alveolar tubes, and could not be regarded as a sign of incipient atonia of heart muscle. A closer definition of pulsus paradoxus was advisable, and the dynamic form should be diagnosed only if the pulse tracing showed the characteristic respiratory changes when taken by an adequate recording system under no pressure outside the range: systolic pressure to 15 mm. below.

Dr. A. BRIAN TAYLOR read a paper on

Tuberculous Empyema.

This form of empyema, he said, differed from other forms and required different treatment. His paper was based on a series of 79 cases from the Brompton Hospital. A purulent tuberculous effusion indicated pleural tuberculosis, either primary or secondary; a clear effusion might be a secondary exudate or an allergic response. The morbid process in the pleura followed the usual changes of tuberculous lesions, but the frequency of early adhesions accounted for the comparative rarity of empyema. Only a few main ætiological types were common. In his series the onset had been as follows: (1) in an artificial pneumothorax, 47 per cent.; (2) by primary purulent pleurisy, 15 per cent.; (3) in a previous serous pleurisy, 16 per cent.; (4) after spontaneous pneumothorax, 22 per cent. The final diagnosis was made by finding the bacilli in the exudate, but often diagnosis had to rest on the presence of a sterile effusion, with a more or less chronic course and clinical features compatible with tuberculosis. The clinical course might, however, vary widely.

The treatment presented problems of the gravest difficulty and the prognosis was bad. Treatment must take into account: (1) the mechanical and toxic effect of the effusion; (2) the condition of the underlying lung; and (3) the general state of the patient. When the trouble in the lung was slight or controlled, where the pneumothorax was otherwise producing satisfactory results, or where the general condition was good, treatment should be energetic and radical. Removal of the effusion was best performed by gas replacement, which occasionally produced cure. More often, further treatment was needed, and pleural lavage was often very helpful. By continuing pleural lavage combined with gas replacement to keep the cavity dry and empty, the lung could be gradually re-expanded to such an extent that complete cure resulted. It was, of course, useless to re-expand a lung containing

active disease, but expansion was fairly safe after two years. Pleuricotomy with constant drainage was a useful measure but seldom produced permanent cure. It was a temporary measure, or could be applied when the patient was too ill for radical treatment. Oleothorax had not proved very satisfactory at Brompton; it was mainly indicated in recurrent purulent pleurisies where the toxæmia was very severe, in cases secondarily infected before surgical treatment was commenced, or in the presence of pleuro-pulmonary perforations which might be healed by oil. Thoracoplasty was one of the most valuable methods; it brought the chest wall down to the lung to produce adhesions. It was the operation of choice when the active lung disease was unilateral, or where it had been locked up by fibrosis. Phrenic avulsion should be performed first.

Of the 79 cases in this series, 31·6 per cent. were alive three years after treatment, 58·2 per cent. dead within two years, and the rest untraced. Pleural wash-outs had been used alone in 18 cases, half of whom had died, and in addition to gas replacements in 57 cases, 52·6 per cent. of whom had died. Thoracoplasty in 13 cases had had a mortality of 30·8 per cent.

Dr. G. MARSHALL said that tuberculous empyema was almost always due to rupture of the lung, and treatment should depend on whether it was tuberculous or secondarily infected. If the purely tuberculous were left alone, most patients did well, but the secondarily infected had to be treated, preferably by continuous suction drainage, which was a tedious treatment but extraordinarily worth while.

Dr. E. R. CULLINAN read a paper on

Dermatomyositis.

This was, he said, a disease of unknown origin difficult to diagnose from scleroderma. It appeared to be an infection, but nothing else was known of its ætiology. He described a case which appeared quite different from scleroderma. The patient had complained of loss of power and a rash. She had had difficulty in walking and balancing, in feeding herself, and in clearing her throat. She had had vague generalised pains. The rash had been a patchy skin pigmentation; the skin had felt stiff and the subcutaneous tissue thick. All the joints had been stiff—some of the muscles had seemed to be in a state of tonic contraction, and had shown some reaction of degeneration. The chief reflexes had been absent. There had been moderate evening fever. She had gradually become worse, and had died in a manner suggesting suffocation from mucus which she could not dislodge. The peculiar changes in the muscles were apparently confined to dermatomyositis; they were never seen in scleroderma, however similar the two skin conditions might be. Autopsy had shown a marked lymphoid hyperplasia in the stomach, spleen, and thyroid, a general diffuse fine fibrosis, with wide areas of chronic inflammation (lymphocytes and histiocytes) in the muscles, and foaming macrophages in the areolar tissue. Some fibres showed a hyaline degeneration like Zenker's degeneration.

Dr. PARKES WEBER asked whether the urine had been examined for myoglobin, and what precisely was meant by lymphoid changes in the stomach and thyroid.

The PRESIDENT asked if the blood had shown any eosinophilia.

Dr. CULLINAN, in reply, said that the urine had not been specially examined for myoglobin; it had contained no albumin. By lymphoid hyperplasia he meant overgrowth of the lymphoid tissue in the subepithelial layer of the stomach, but there had been no definite appearance of follicles in the thyroid. There had been no eosinophilia.

SECTION OF UROLOGY.

AT a meeting of this section on April 21st, the chair was taken by Mr. RALPH THOMPSON, and a discussion on

Nephrostomy in Theory and Practice

was opened by Prof. HUGH CABOT of the Mayo Clinic. Nephrostomy, he said, was a very old operation as an emergency procedure, but the earliest discussions on the subject did not appear to date back beyond the 'eighties. The rapid return of function and the effect, upon infection, of drainage through the kidney substance had attracted attention at that time. He would, he said, consider the application of nephrostomy in three types of case—namely, calculus disease; chronic hydronephrosis with or without infection; and chronic infection of the kidney. Nephrostomy was desirable in calculus disease when the pelvis and calyces of the kidney were markedly dilated, and he believed that the operation diminished the risk of infection considerably in the non-infected cases; there was, however, the possibility that the operation might stir up latent infection. Where the kidney had been primarily injured by stone, and had subsequently been the site of prolonged infection, it was a temptation to regard nephrectomy as the only safe operation; but if there were stones, however small, on the opposite side he hesitated to recommend nephrectomy. Moreover, in a number of instances where the stone-bearing kidney on one side had been removed, stone had developed in the opposite kidney although it might have been healthy for years. In one sense a stone-bearing kidney on one side might be a safeguard to the other kidney. Possibly on the removal of the stone-bearing kidney the disturbance of chemical mechanism, whatever it might be, was transferred to the previously healthy kidney. For these reasons he was unwilling to perform nephrectomy where it could be avoided, and preferred to do as much as possible for the injured kidney, however serious the damage might appear to be. Cases of pyonephrosis without stone also fell into this group, and were undoubtedly the outcome of infection of a hydronephrosis. It had been recognised for many years that, although it was not possible to determine with any accuracy how much the function of a kidney containing a stone was depressed, removal of the stone would often result in a return to something approximating to normal function. In cases of pyonephrosis, however, the kidney was often reported to be completely functionless. This did not necessarily mean that the kidney was incapable of function. In a series of 42 cases in which no function other than moderate secretion of water could be detected, he had found that drainage of the kidney and removal of stone, where stone was present, resulted in a return of about 50 per cent. of the normal function. It was, therefore, unjustifiable to declare a kidney incapable of function, even when it failed to respond to the elaborate tests now available. In the normal kidney only a certain proportion of the glomeruli were active at any one time, and under adverse conditions it might be possible for the whole kidney

to lie fallow for a considerable period. If the active glomeruli were reduced from about 30 per cent. to about 3 per cent. the kidney might possibly continue to preserve its anatomical structure and capacity for normal function. Nephrostomy was valuable as a method of estimating the capacity of a kidney which appeared to be functionless. An advantage of nephrostomy over pyelostomy was the provision of more satisfactory drainage. His experience had been that kidney function would return after drainage in proportion to the amount of normal kidney tissue remaining. Opinions differed on the effect of nephrostomy in clearing up infection. Acute recent infections generally cleared up entirely, but were relatively rare among the cases in which the operation was indicated. Recent and slight infection of an acute hydronephrosis usually cleared up readily whatever method of drainage was employed, provided the obstruction was removed. With chronic infection the question presented difficulties; at the Mayo Clinic there were a number of patients who had been draining for some years following nephrostomy, and who were retaining a kidney of some value. A kidney which had been severely infected at the outset usually continued to harbour urea-splitting organisms, but it might serve as a useful organ, nonetheless, which was worth preserving if the opposite kidney was injured. Where both kidneys were damaged it was worth while trying to preserve a kidney of this kind; he did not think there was evidence to support the view that such a kidney menaced the kidney of the opposite side. He believed that nephrostomy had a wider field of application than was usually conceded. In cases of doubt the function of an infected kidney might be saved by the operation, whether stone was present or not. In certain cases, particularly cases of cancer, permanent nephrostomy might be valuable, and was not more socially inconvenient than permanent colostomy; the patient might live comfortably for many years. The tube could be so arranged as to be accessible to the patient, who could change it himself after a little experience. He shared the view, put forward in 1910 by Watson, that in bilateral calculus disease, permanent nephrostomy on one or both sides might preserve the kidney tissue from further destruction. It was even possible that in some cases permanent nephrostomy might inhibit the development of further calculi in the kidney, though the evidence on this point was inconclusive. At his clinic there were patients operated on for recurrent calculi who had lived for 3, 6, and 15 years after permanent nephrostomy without further recurrence. Two other cases had been reported in which permanent nephrostomy had been performed for recurrent calculi, and there had been no further recurrence. In Watson's case in 1910 not all the calculi had been removed, but there was no evidence that they increased in number following permanent nephrostomy, and the patient lived for 25 years with good kidney function.

Sir JOHN THOMSON-WALKER remarked that in this country the term nephrostomy was used to imply an operation leaving a permanent fistula, and nephrotomy was reserved for temporary drainage of the kidney. Conservative treatment was favoured in cases of bilateral calculus, but it had not been his experience that removal of stone from one kidney favoured the development of stone in the other. On the contrary, it had been found that if an infected stone was left in one kidney, there was a tendency for stone to develop in the opposite kidney.

Mr. JOCELYN SWAN doubted whether the apparent improvement in renal function following drainage was a true improvement. The stone might depress the action of the kidney in the earlier tests, and the apparent restoration of function following removal of the stone was therefore deceptive.

Mr. F. A. G. JEANS and Mr. ZACHARY COPE also joined in the discussion.

Prof. CABOT, in replying, said that nephrostomy was not an operation which should be substituted for nephrectomy if the other kidney was sound.

THE MEDICO-LEGAL SOCIETY.

AT a meeting of this society on April 28th, with Lord RIDDELL, the President, in the chair, a paper on the

Gynæcologist in the Law Courts

was read by Mr. J. BRIGHT BANISTER. He said he believed that most gynæcologists felt an abhorrence about appearing in the law courts, first because the cases concerning which they were required to give evidence were usually sordid and unsavoury, and secondly because a gynæcologist in active practice found his work seriously dislocated by the inevitable delays associated with legal hearings. Further reasons were that the evidence he had to give was hard to present to the non-medical mind, which usually was very ignorant of the subject. Recently, for example, a successful barrister was much annoyed with a doctor because X rays had not been employed to settle the mystery of a possible six weeks' pregnancy. The gynæcologist's difficulties were not lessened by the fact that usually he knew nothing of the law; it took him a long time to realise that law and equity were not related to one another. Even the oath appalled him, for it required the telling of "the truth, the whole truth, and nothing but the truth." A medical examination was made, and certain facts were noted, which, communicated to the court, were, to the doctor, the truth; but if other facts not noticed were not included it was not the whole truth. And in the interpretations and inferences drawn, the witness was made to feel that his completed evidence was something more—it might even be less—than the truth. Even the words he used were sometimes altered, as in a case in which he referred to a woman's abdomen, and the judge interposed with the remark to the jury: "When the doctor says her abdomen he means her stomach."

Mr. Banister's main purpose, he said, was to relate some of the reactions of a gynæcologist to his experience in the courts. He thought a distinction should be drawn between the gynæcologist and the ordinary medical witness and that the former should be regarded as an expert, for he was required to maintain an impartial outlook on all the circumstances at issue. The examination-in-chief and the cross-examination were apt to produce on the witness one of two effects: either he became antagonistic and so lost his impartiality, or he realised that anything was possible in gynæcology, as in other branches of the profession, and so was of little use to any one side, especially as he heard evidence by other medical witnesses which was at variance with his own. Mr. Banister therefore thought that a medical witness on a subject should be one who had experience of it in actual practice. In one case a medical witness, who said he had been 30 years in practice and had commanded a general hospital during the war,

gave evidence to the effect that a cystocele was a cyst containing fluid, and so could not be in the genital canal of a woman—though he had never seen a cystocele. Another medical witness in the same case admitted he did not know what a cystocele was. What was the position of the medical witness who was to follow?

Another thing to remember was the attitude of the law towards the class of case in general in which the gynæcologist was called as a witness: lawyers in the case were sure to give weight to the published abnormalities associated with the generative function. On a question of the division of an estate on the presumption that a woman advanced in years would not bear any more children, the experience and knowledge of the gynæcological witness was largely nullified by counsel quoting cases—some not well authenticated—of women having given birth to children at an advanced age. Early last century it was stated that a woman, aged 69, had given birth to a child, but it was now agreed that there could be no childbirth after the age of 52. Again, the law presumed that pregnancy could not occur until some degree of menstruation had been set up, but some years ago a girl, aged 10¾ years, was brought to hospital and was delivered of a normal child weighing 8 lb., though no one connected with her knew of her having had periods at any time. The important matter was to get all possible evidence in regard to the particular patient.

One of the most difficult things was to stand up in the witness-box and say that a particular patient was not virgo intacta; it would be easier to say she was so. Cases had been reported in which a baby was born to a mother who, to all appearances, had an intact hymen. Another difficulty was to say, in an old-standing case, whether a woman had had venereal disease, and in this connexion Mr. Banister criticised the carefully guarded attitude of some pathologists who declared themselves uncertain those presented with a slide of discharge from the patient in question.

Mr. Banister thought medical cases would be more satisfactorily settled if a medical assessor could sit to advise the judge on technical points.

DISCUSSION.

Sir BERNARD SPILSBURY thought that the gynæcologist was usually regarded by the courts as an expert, not on the same level as a general practitioner. He agreed that a real difficulty, when cases were heard in court, was having unusual or very rare cases quoted against a considered opinion. And many of the cases in the literature were not well authenticated, and under present conditions would not be accepted as reliable. As regards the diagnosis of virgo intacta he mentioned a case in which destruction of a child's hymen was due to threadworms, and until the cause was known suspicion of foul play was entertained. He did not think any pathologist should hesitate to give a firm opinion on the discharge in an early case of gonorrhœa. In a later stage, however, the genital tract swarmed with bacteria, and the gonococci were so far diluted that sometimes it was not safe to express a positive opinion.

Mr. F. J. MCCANN pointed out that the medical man could state whether a hymen was present or not, and also describe the condition in which it was found, but it was quite another matter to say that a girl was virgo intacta. He had never yet seen a girl with a hymen congenitally absent, though witnesses in court had often made a strong point of the possibility of its congenital absence. Many cases of vulvitis were treated on the assumption that they were gonococcal when they were not, and the reprehensible habit of syringing—which served to carry the infection still higher—was responsible for destroying many hymens. The acute stage of gonorrhœa was easy to recognise, but in women the diagnosis in a chronic stage was difficult. An important point was, that if one could discover, with the urethral infection, involvement and enlargement of the glands of Bartolini, one could be certain that the condition was gonorrhœa.

Sir WILLIAM WILLCOX objected to the appointment of assessors to help the judges; he believed that in general the best assessor was the British jury. The present system worked well. When, owing to lack of means, no expert was giving evidence on the other side, he made it his practice to give a general review of the case from the medical aspect.

Mr. W. G. EARENGEY, referring to the telling of the whole truth, said that if doctors were going to set out to tell the court all they knew about the subject at issue, there was likely to be a long extension of hearings. And doctors should not have the idea that they were ranged on to a side in the case; they were called to supply important information.

Dr. J. WATKIN EDWARDS approved of the appointment of an assessor to assist the judge; one did not want in that post a man who could analyse evidence, but one well acquainted with the subject under consideration.

The PRESIDENT expressed his objection to the appointment of assessors. If such were appointed they would not be very popular among their professional brethren, who did not think very much of each other personally, though they were ready to coöperate against the rest of mankind! Their critical attitude was of much service in the courts. In order to obviate the great waste of professional time the courts required a business manager, who would so arrange cases that there was little waiting on the part of witnesses and counsel. He was firmly convinced that the British system of administration of justice stood in need of no emendation. As to the age beyond which it was not possible for a woman to conceive, he once offered a prize of £40 for the discovery of the oldest mother, and the winner was a woman aged 53 years 224 days; mother, father, child, and doctor attested to the fact.

Mr. BANISTER replied that he did not feel there was any want of considerate treatment by the courts of the gynæcological witness; his chief complaint was about the great amount of time such witnesses, with others, were obliged to waste.

ORTHOPÆDIC HOSPITALS.—At the annual meetings of the Shropshire Orthopædic Hospital, Agnes Hunt Surgical Home, and Derwen Cripples' Training College it was stated that 1549 in-patients, 707 of whom were children, were treated last year. The average stay of each adult was 110 and of each child 73 days; there were 598 operations. There are 33 after-care centres which in 1931 treated 4403 patients. New buildings for the training college to accommodate 100 students are nearing completion. They have been built by direct labour, much of it by the cripples themselves. On account of the very severely crippled type of student admitted to the college, the Board of Education has sanctioned an increase in the fees from 25s. to 35s. per week.—Two patients, one in the uniform of a Scout and the other in that of a Guide, recently laid the corner-stone of the new Princess Margaret Rose Ward of the Bath and Wessex Children's Orthopædic Hospital. The cost of the ward, £6500, is being defrayed by Mr. Stanley Wills.

REVIEWS AND NOTICES OF BOOKS

A Text-book of Psychiatry.

Third edition. By D. K. HENDERSON, M.D., and R. D. GILLESPIE, M.D. London: Oxford University Press, Humphrey Milford. 1932. Pp. 595. 18s.

Essentials of Psychiatry.

Second edition. By GEORGE W. HENRY, A.B., M.D., Assistant Professor of Psychiatry, Cornell Medical School, New York. London: Baillière, Tindall, and Cox. 1931. Pp. 304. 21s.

THE valuable text-book by Drs. Henderson and Gillespie is now the fullest and most satisfactory single exposition of Anglo-American psychiatry available. Though it is less comprehensive and detailed than the comparable Swiss and German text-books, and oddly capricious in the selection of recent work for notice, its authors have evidently taken trouble to make the work a reasonably complete manual. An informative, cautious chapter on the psychiatry of childhood has been added, and the chapters on epilepsy and legal aspects have been expanded. The section on paranoia and paranoid reaction-types is unsatisfactory, and a notable omission is the failure to refer to the recent work of Kolle in this field. The psychopathology still gives the impression of a patch, perfunctorily inserted, rather than matter incorporated into the pattern of the work as a whole. The value of the book would be enhanced if all references were given in full, instead of merely the name of the writer under discussion. It is hard to see the justification at this date for a separate chapter on psychoses and psychoneuroses in war. It would be a pity if so useful and handy a work were to become unwieldy through increase, and consequently suffer a falling off in its popularity among medical students and others; but if it could be done without making the book too bulky, a fuller discussion of psychopathic personality and of the general principles of treatment would be an advantage in the next edition.

There will inevitably be differences of opinion as to which are the essentials of psychiatry. Dr. Henry's book presents in direct and unpretentious form that broad, rather than precise, approach to the subject which has come to be characteristic of the American school. An emphasis on total reactions, on environmental influences, on personality and habit-formation, may be regarded as giving the best background and introduction to the study of this most intricate branch of medicine, especially if therapy be the end in view, rather than research. But one would expect more than a line or two to be given to the hereditary aspects of mental disorder, or, in another field, to the malarial treatment of general paralysis of the insane. General principles, however, and the psychological and social approach have been the author's chief concern, and the book is well-balanced from this point of view. Less than half of it is occupied with descriptions of abnormal syndromes; the major part consisting of chapters on methods and purpose of examination, principles of treatment, mental hygiene, psychopathology of the normal, medico-legal and historical aspects, and psychiatry in the general hospital. There are also excellent chapters on psychiatric nursing (by Adèle Poston, formerly matron at Bloomingdale Hospital), and on psychiatric social service. The work has been considerably rewritten and enlarged for this second edition.

Fertility and Sterility in Marriage.

By TH. VAN DE VELDE, M.D., formerly Director of the Gynæcological Clinic at Haarlem. London: William Heinemann, Ltd. 1931. Pp. 448. 25s.

THIS is the third of a trilogy of books written by Dr. Van de Velde of which the first, "Ideal Marriage," was reviewed in 1929.[1] The author has here set himself the difficult task of writing both for the medical and the lay public and, as is to be expected, the work suffers from this dual intention. The medical reader will find in it much tedious description of the anatomy and physiology of the reproductive organs; the lay reader will encounter throughout the book disconcerting outcrops of technical terms the meaning of which he will not understand. But the book suffers from another defect which will distress both classes of readers. The author does not confine himself to describing and interpreting the relevant facts. He generalises freely on moral and religious questions. Thus he is at pains to differentiate the ethical position in regard to contraception which he personally adopts, from that assumed by moralists and ecclesiastics; he condemns, on a priori moral grounds, the legalising of abortion without any reference to the vexed question whether the measure would diminish maternal morbidity and mortality; he introduces into the text of his book two "intermezzos of aphorisms" which do not add to its scientific value; and he expresses himself as follows on the subject of religion: "In my opinion, religion is of enormous importance, for individual happiness; I consider religious belief and 'illusion,' 'fiction,' and 'vital hypothesis' of the first rank, offering many human beings such help and support in the conduct of their lives, that, to them, life would be insupportable without such belief." The illusory, fictitious, and hypothetical characteristics of religion are then dealt with at length. It may be felt by medical readers that the tone of the book suffers from the fact that the author dogmatises too freely in the first person on moral questions.

However that may be, Dr. Van de Velde deals informatively with a wide range of subjects. The attitude taken by the Roman Catholic Church, the population question, the problems of differential fertility, and the personal implications of contraception are instructively discussed in the first part of the book which is devoted to "ethical postulates and principles." In the second part, chapters on the physiology of reproduction and the prevention of pregnancy precede an exhaustive discussion of the causation, treatment, and prevention of sterility in women, and of impotence in men. There follow chapters on artificial fertilisation and contraception. In the latter appears a condensed and, from the standpoint of this book, irrevelant account of the various positions in which coitus may take place. Dr. Van de Velde has already given an elaborate presentation of this theme in "Ideal Marriage" which has been copied by other writers and is one of the fullest in the English language. The book contains further chapters on sterilisation by surgical, biochemical, and radiological methods. The author has invented a somewhat elaborate operation by which he claims temporarily to sterilise female patients. It consists of an incapsulation of the

[1] THE LANCET, 1929, ii., 177.

ovaries in the uterovesical pouch. The ovaries are thrust forward through an incision in the broad ligaments, after which the uterus is sewn over them to the bladder. In order to unsterilise the patient, the operative procedure is reversed. The operation is not, in our view, likely to be favourably received, for it is open to many criticisms.

Twenty plates illustrate pelvic anatomy, ovarian segmentation and implantation, operative procedures, and contraceptive appliances. The author's tendency to dogmatise is evident in his treatment of scientific no less than of ethical subjects. He leaves few topics sub judice and he makes at least one assertion which has been disproved—namely, that the intra-uterine silver ring *must* have an injurious effect upon the child if a pregnancy occurring despite the presence of the ring goes to term. On the last page of the book is given the address of a manufacturing chemist from whom a contraceptive jelly invented by the author may be purchased. There are 317 references to other books and papers, mostly in German, which are not arranged in alphabetical order. Many of these have but a distant bearing on the subject, while some important recent work in this country is not noticed. There is no index. The translation is competent and the book, as a whole, is readable.

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1. Exercise and its Physiology.

By ADRIAN GORDON GOULD, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University; and JOSEPH A. DYE, A.B., Ph.D., Assistant Professor of Physiology in Cornell University. New York: A. S. Barnes and Company. 1932. Pp. 434. $3.

2. Physiology of Exercise.

By FERDINAND AUGUST SCHMIDT, M.D., late Director of Health of Bonn, Germany; and WOLFGANG KOHLRAUSCH, M.D. Berlin. Authorised translation by CARL B. SPUTH, M.D., Dean of the Department of Science and Hygiene, Normal College, A.G.V., Indianopolis Ind. Philadelphia: F. A. Davis Co. 1931. Pp. 216. $2.50.

1. Though no original matter is included in this work, it provides one of the most complete expositions of the subject that has appeared. It is clear that the available literature has been surveyed, and that a careful selection of essentials has been made. The result is encyclopædic, and forms an invaluable work of reference to be studied rather than read. Although the authors express their intention of avoiding technical terms, the book is not easy to read, a condition which arises not from ambiguity nor confusion of expression, but from their determination to be comprehensive and exhaustive. Few students, even of advanced physiology, would readily find themselves able to define the relation between phosphocreatine and the formation of hexosemonophosphate, or the connexion between a rheobase and chronaxie, or the five conclusions which can be drawn from a study of the stimulation of single muscle-fibres. These are examples picked at random among the questions submitted at the termination of the chapters in the early part of the book, and are advanced only to show that complete understanding of the work will demand careful study. The arrangement of the chapters is excellent, and an admirable summary is given at the end of each.

2. It is claimed in the preface that this translation of the late Dr. Schmidt's "Physiologie der Leibesuebungen" is one of the most complete works on the physiology of exercise. Such a claim can hardly be accepted; since, although the general physiological principles relating to exercise are included, they are considered in too superficial a fashion to compare with the elaborate treatises on the subject which a serious student would require. Nevertheless, this book can be warmly recommended as something quite different from the usual presentations, for it is the dynamic and mechanical aspects that are particularly emphasised. It should make an appeal to the student of athletics who is satisfied to skim lightly over the scientific principles, and who is not in a position to assimilate the details of advanced physiology. Considerable emphasis is laid upon the differentiation of constitutional types, and an attempt is made to correlate anatomical characteristics with physiological attainments. Such criteria are supported by reference to famous contemporary athletes, and the arguments are sustained by attractive action photographs and cinematograph studies. In this respect the author is sometimes rather too enthusiastic, as when he aspires to advise a young man upon the kind of sport in which he may expect to excel. "We must be able," he says, "to base our judgment on the expression of his face and on his character and temperament as well as on his physical fitness." But on the whole sound common sense accompanies accurate information. We are thoroughly in accord with the wisdom of the warning that, though much interest attaches to the investigation of the mechanics of the joints and muscles involved in complex activities, little is to be gained by an attempt by minute analysis to explain the forces which make for successful performance of a difficult feat.

The translation has been admirably conducted. The language is vivid, and only occasionally do such expressions as "booster," "lose out," "all in" contribute a transatlantic flavour. Evidence of a critical eye is afforded by occasional corrections of the original text.

REPORTS AND ANALYSES

MARTELL'S BRANDY.

(J. AND F. MARTELL, COGNAC.)

WHEN submitted to analysis this brandy, the well-known "Martell's Three Star," gave the following result:—

Alcohol by volume per cent. ..	[illegible]54
Proof spirit " "	[illegible]
Alcohol under proof	30·8°
Extractives containing sugar per cent.	0·62
Total acidity as acetic acid per cent. ..	0·032
Apparent specific gravity	0·9546°

Secondary products expressed as parts per 100,000 of absolute alcohol:—

Acidity (acetic acid)	33
Aldehydes	25·3
Furfural	5
Esters as ethyl acetate	88
Higher alcohols	135

The analysis of the secondary products shows without doubt that this brandy is genuine, but it is not possible to judge the quality of a brandy from figures alone. Palate and other physical characteristics are still the pre-eminent criteria. The evidence of taste here goes to prove that the sample submitted was an old-matured cognac grape spirit.

We last analysed this well-known brandy some twenty-seven years ago and are glad to be able to state that the evidence both of analysis and taste indicates that the high standard of purity and quality has been maintained, and that the brandy is eminently suitable for medicinal purposes.

THE LANCET.

LONDON: SATURDAY, MAY 7, 1932.

HOSPITAL THRIFT.

Lord LLOYD has lent his name and fame to a scheme for meeting the needs of those who now find it difficult to get treatment of serious illness at a price within their means. The attractive features of the British Provident Association for Hospital and Additional Services are that its benefits are fully enjoyed by the subscribers to it—the whole of the funds, after payment of administrative expenses, will go to the provision of benefits; and the benefits themselves are guaranteed and underwritten. The only charitable element in the scheme is the advice and experience of its executive council, which is given free of charge, and a loan by the Pilgrim Trust of funds sufficient to make a start. The benefits offered are in brief these. For an annual subscription of a guinea in the case of a single man or woman; a guinea and a half for married couples; or two guineas for a married couple with one or more dependents, a sum of £5 a week for a period not exceeding three weeks will be available if the subscriber or dependent has been admitted for any reason to a hospital, or to a nursing home for a necessary surgical operation. An addition of 50 per cent. to the subscription will extend this benefit to a period of six weeks. If a subscriber or dependent is attended at home on account of an operation or dangerous illness by a resident nurse, a sum of £3 3*s.* per week is available for not exceeding three weeks. For a consultation, when the medical attendant is in doubt or difficulty, a sum of £1 1*s.* is available towards the fee of a consultant at his rooms, or £3 3*s.* if he visits a patient who cannot leave home. For treatment at the Radium Institute (with which no doubt it is intended to associate the Mount Vernon Hospital) one-half of the charges up to a maximum contribution of £40 is available in any year. A subscriber is entitled to the use of an ambulance up to the value of £1. Finally, a limited proportion of funds is put by to maintain subscribers and dependents in a nursing home in cases of dangerous illness other than a surgical operation. This is the basic subscription and benefit. A graded addition to the subscription entitles a subscriber or dependent to contributions towards surgeons' fees up to a maximum of £25, £50, and £100 respectively. And finally another increment of twelve shillings and sixpence in the case of a single man or woman will provide £1 1*s.* a day up to 20 days towards the fee of a consulting physician in attendance during treatment in a hospital or nursing home. These are the benefits offered, and it is to be understood that they do not include any help towards the fees of a general practitioner, assistance in the case of maternity, tuberculosis, infectious or mental disease, or the services of an ophthalmic surgeon except in respect of some specific disease. While there is no age limit to membership it is obvious that persons suffering from chronic illness cannot be accepted, and except in cases of emergency the benefits are available only upon the recommendation of the medical practitioner in attendance. A subscriber's child is regarded as dependent only up to the age of 16 years. So far the scheme will indemnify the subscriber against the cost of stay in hospital or nursing home, but it does not completely solve his problem unless he can find a private bed available at an economic weekly charge. The Association has come to the conclusion that he cannot rely upon this, and, in addition to the mutual and coöperative scheme, it has evolved a founders' scheme by which an individual, for a single payment of £10, can secure for himself and his family the first call upon a private bed for which he will pay only the actual cost of maintenance. Experience and inquiry has satisfied the directors that a properly equipped private bed costs on the average no more than £1000, and suffices for the sickness of a little more than 100 families. The beds contemplated in this scheme have yet to be built, but in the meantime arrangements have been made with a number of hospitals under which private beds will be immediately available, and more permanent arrangements are in contemplation.

The history of the movement is not devoid of interest. In 1921 the late Dr. GORDON DILL, of Brighton, started a scheme in Sussex to provide hospital maintenance and treatment on the basis of a yearly voluntary subscription of a pound per annum for an individual, thirty shillings for a married couple, two pounds for married persons with children under 16 years of age, the income limit being £250, £400, and £500 respectively. The facilities were available only on the application of the patient's family doctor and with the approval of the members of the hospital staff concerned. Beside hospital treatment the subscription was planned to cover consultation where necessary at home, dental treatment, laboratory investigations, nursing services, and the use of an ambulance. After some initial criticism this scheme gained the approval of the medical profession in Sussex, and began to attract attention elsewhere. Nine of the general and special hospitals in Sussex agreed to coöperate, and the result has proved of equal value to the hospitals concerned as to the subscribing public. Having set his scheme going in Sussex, Dr. GORDON DILL widened his sphere of influence, and with the coöperation of Sir ARTHUR STANLEY, Sir ALAN ANDERSON, Lord DAWSON, Mr. MCADAM ECCLES, and the late Viscount KNUTSFORD, initiated the National Provident scheme for hospital and additional services, giving of his time and energies without stint. In 1923 this national scheme was incorporated in the British Provident Association, and began a decade devoted to collecting and tabulating facts and figures on which to base a comprehensive scheme on a larger scale, Mr. ECCLES taking Dr. DILL's place as instigator. In

1927, when King Edward's Hospital Fund for London set up a committee of inquiry, the Association put before it the results of their investigations, with the result that the committee recommended the organisation of an effective scheme of mutual provision for middle-class patients against the cost of treatment and the exploration of a scheme of subscription to the capital cost of the new pay beds which would be needed.

This larger comprehensive scheme has now been launched with the double stimulus of a successful object-lesson and of a period of economic pressure in which the haphazard arrangements of a more bountiful time are unlikely to survive. The Sussex Provident scheme has been a remarkable success; at the end of last year its subscribers numbered 30,374, covering themselves and more than as many dependents. Last year distribution was made in respect of treatment for members to an amount of nearly £15,500 to the coöperating hospitals, representing £2 4*s*. 11*d*. a week for every in-patient in the Brighton area. Coöperation has been secured with practically every hospital in the area, Worthing Hospital having come in during the past year, and arrangements have been made with public assistance committees where treatment is given at transferred hospitals. At the recent annual meeting Sir ARTHUR JENNINGS, in moving a vote of thanks to the chairman, said that nothing was better evidence of the value of the system than the fact that everyone was now trying to imitate it; and Sir PHILIP CRAWLEY, in response, said he thought as time went on hospitals would have to rely more and more on these contributory schemes for their assured income. Voluntary hospitals do not stand to gain so much directly from the British Provident scheme because it has surrendered to the Hospital Saving Association the class of patient entitled by a means test to occupy hospital beds; and this Association contributed last year half a million pounds to voluntary hospitals in London. Indirectly, however, the scheme will benefit these hospitals enormously by preventing their abuse. Outside London, voluntary hospitals are coming to depend more and more upon contributory schemes of various kinds. If the British Provident Association makes good as the Hospital Savings Association has done, they should together help the London voluntary hospitals in the way best suited to their needs.

UNDULANT FEVER.

THERE are probably few diseases in this country at the present day which present so many features of interest as the condition rightly or wrongly termed undulant fever. To the epidemiologist its incidence and the method of infection are fascinating problems; to the bacteriologist its diagnosis and the differentiation of the various types of invading organisms afford ample scope for inquiry and ingenuity; to the clinician it is a stumbling block of the first order; to the hygienist its prevention calls for a profound study of the main channels of infection; and to the veterinarian, though undulant fever in man is of but secondary interest, contagious abortion of cattle, which is the chief source of infection both in animals and in human beings, is a disease whose control and ultimate eradication are attended by as many difficulties as those of tuberculosis itself.

Our knowledge of the extent of undulant fever in Great Britain is strangely deficient, and there are many who are prepared to minimise its incidence. We do know, however, that during the past five years a number of definite infections with an organism of the brucella group have been recorded; that in the few instances in which complete bacteriological typing has been performed the organism has proved to be of the bovine *abortus* variety; that whenever a number of blood-sera from patients with undiagnosed pyrexia are examined, a smaller or larger percentage are found to contain agglutinins to brucella in a titre probably indicative of active infection; that contagious abortion in cattle is an extremely widespread disease; and that a fairly high proportion of raw market milk contains living *abortus* bacilli. We know that infection with *Br. abortus* frequently gives rise to no clinical symptoms of disease, in this respect resembling infection with the tubercle bacillus. We know, too, that when active disease does occur it is of so protean a nature that a diagnosis is possible only by bacteriological investigation. A few cases, it is true, exhibit the typical pyrexial curve that suggested the name undulant fever, or one of the variants described by Sir W. DALRYMPLE-CHAMPNEYS in our issue of April 9th (p. 791); in most, however, the clinical symptoms are so little characteristic that the disease is diagnosed as influenza, tuberculosis, enteric fever, appendicitis, rheumatism, broncho-pneumonia, or some other condition. With these facts before us it is clear that we can have very little idea at the moment of the real incidence of *abortus* infections. In Denmark, where the Central Serum Laboratory at Copenhagen examines bloods collected from the whole country, and where during the four years 1927–1930 inclusive over 18,000 specimens of sera were examined from patients with undiagnosed pyrexia, cases of undulant fever have been recognised at the rate of four or five hundred a year. In this country it is by no means a routine practice to test Widal bloods against brucella, and probably only a few hundred sera have actually been examined for agglutinins to this organism. If the practice became general of sending in sera for examination from all patients with pyrexia whose cause presented the slightest doubt, and if all sera were tested against *Br. abortus*, it might well be found, as it has been found in Denmark, that undulant fever is commoner than typhoid and paratyphoid fever put together.

Bacteriologists are paying increasing attention to the prevalence of this disease, and it is gratifying to note the excellent studies on this subject which have recently been conducted in Scotland. One of these, by Dr. C. P. BEATTIE, of Edinburgh, is published in our present issue, and another, by Dr. J. SMITH, of Aberdeen, appears in the April number of the *Quarterly Journal of Medicine*.

BEATTIE has examined 28 blood-sera sent in from the city of Edinburgh for Widal examination, and found that five, of which at least four came from patients with undulant fever, agglutinated *Br. abortus* to a titre of over 1/100. He has also examined 47 sera from the surrounding counties, and obtained two significant reactions amongst them. SMITH, in an examination of 373 Widal sera from Aberdeen and the surrounding country, has encountered 11 sera reacting at 1/100 or over to *Br. abortus*, ten of which came from patients with clinical symptoms compatible with those of undulant fever. If we include the figures published by R. CRUICKSHANK and W. J. BARBOUR [1] in the Glasgow area, we find that of a total of 498 Widal sera examined in Scotland no fewer than 16 positive reactions were obtained in patients subsequently shown to be suffering from undulant fever, a proportion of 3·2 per cent. This figure may be compared with that of 3·1 per cent. obtained by M. KRISTENSEN [2] in Copenhagen as the result of examining 17,778 Widal sera. The mode of infection of the patients in Scotland is not altogether certain, though both BEATTIE and SMITH are inclined to the view that milk is mainly responsible. Examining the ordinary retailed raw milk in Edinburgh, BEATTIE found that 29 out of 83 samples, or 34·9 per cent., contained living *abortus* bacilli, while SMITH, in Aberdeen, states that 28·6 per cent. of samples of milk received directly from individual dairy farms was found to be similarly infected. Careful inquiry in the Aberdeen series of cases revealed the fact that a number of the patients had consumed raw milk, and that five of the patients had consumed raw milk which was definitely shown to be infected. Except in one case, direct contact with infected animals seems to have been excluded. It is noteworthy, however, that both in the Scottish and in the English series of cases undulant fever has been observed in town patients consuming very little raw milk, and that only in tea or coffee. How infection occurs in these cases is most puzzling. It seems fairly certain that most people who drink infected milk do not develop active infection, and it must therefore be postulated that some peculiar factors are necessary before the disease can develop in its typical form. What these factors are is a problem urgently awaiting investigation. It is possible that some other vehicle of infection, which has so far escaped notice, may be responsible for some cases. In this connexion it may be remembered that both the Dutch and the American workers have drawn attention to the frequency of *abortus* infections in horses and in dogs. It is as yet too early to say whether these animals are concerned in outbreaks of human disease, but this possibility must be borne in mind. In the United States, particularly in the middle west, hogs are very frequently responsible for human infection, but in Great Britain, so far as we are aware, no case of *abortus* infection in pigs has yet been recorded. Our ignorance of the epidemiology of undulant fever calls for intensive inquiry by all types of workers. Investigations of the nature of those carried out by Dr. BEATTIE and Dr. SMITH will be welcomed by all who are anxious to obtain sound knowledge of this puzzling disease.

[1] THE LANCET, 1931, i., 852.

[2] 2me Congrès International de Pathologie Comparée, Paris, 31, vol. i., p. 68.

NOISE.

THE supposed influence of noise in causing an increase of nervous illness has often led to demands that the subject should be officially investigated, but as soon as investigation is seriously considered what seems to be a simple problem takes on an extraordinary complexity. That noise in our cities has increased is a ready assumption contradicted by the fact that 100 years ago the congregation of a City church complained that the noise of stage coaches drowned the voice of the preacher, and medical writers of the eighteenth century were emphatic about the alarming increase of nervous disorders. Noise is a nuisance, and to be compelled to raise one's voice or strain one's attention because of extraneous sounds may be worse than annoying. We have definite knowledge about auditory fatigue, such as is experienced after an aeroplane journey, and about that auditory degeneration which follows long exposure to noise and appears as an occupational disease like boiler-makers' deafness; and from this positive knowledge it is easy to go on to picture the everyday noises of civilisation producing some physical effect upon nerve structures and thus causing those disorders loosely called nervous.

Some picture of that sort is probably present in the minds of many people who declaim about the curse of noise, but it need only be mentioned to be dismissed. The noises that cause irritation and exasperation possess no physical qualities that can be statistically correlated with those emotional states; indeed, as soon as the matter is approached with the aim of securing material to which statistical methods can be applied a mass of contradictions is at once manifest. To attempt a physical definition of such noises is impossible; what may be a joyous sound to the youthful rider of a motor-cycle may be torment to the light sleeper in a quiet village, and that which is music on one side of a wall may become almost a physical assault when it penetrates to the other. There are some sounds that nearly everyone will agree to call unpleasant, and many other sounds that are unpleasant only to some people; so that when complaint is made of a noise the only certainty about it is that the person complaining does not like it. Moreover, experience of individual complaints provides an extraordinary range of aversions. At one end are sounds—that of the pneumatic drill in our London streets, for example—about which there is general agreement; then come sounds—such as thunder—highly disturbing to some people and mildly interesting to others; then at the extreme are stimuli, neutral to most of us, which produce in some individuals reactions of such intensity as to be equivalent to phobic states. Fear of thunder may be of this nature,

and was notable as a psychoneurotic symptom in post-war cases. Strongly marked aversions may be so specific to the individual that a personal significance must be assumed, and cases have been recorded in which that significance has been revealed by methods of mental exploration. Experience of noisy trades shows that emotionally stable people are able to adjust to noise and cease to notice it within a day or two, though work now being undertaken by the Industrial Health Research Board may perhaps show that noise has an unfavourable influence upon output.

It appears then that people suffer from noise because they are nervous, which is a reversal of the assumption that noise produces nervous conditions. Nevertheless there are vicious circles in psychopathology, and though noise may be distressing because of the nervousness of the victim yet it may in turn exacerbate the nervous state. In the tendency to blame noise as a primary cause of nervous breakdown the psychopathologist sees, however, an unhealthy attempt—one among many—to avoid the recognition of the true nature of the complaints grouped under that convenient but obscurantist diagnosis. The chorus of popular approval that greets such blame marks the universal tendency to externalise inner difficulties of emotional adjustment to life, though it may be useful in furthering any movement for the suppression of noise—for noise, like a bad smell, is a nuisance from which we all, nervous or not, have a right to be protected.

ANNOTATIONS

CHEAPER AND QUICKER LAW.

BUSINESS men in London and elsewhere have long demanded that litigation in the High Court be made simpler, cheaper, and quicker. Certain definite suggestions were made, for instance by Mr. Claud Mullins in his book "In Quest of Justice." The two branches of the legal profession criticised the proposals collectively, and now the Rule Committee of the Supreme Court has evolved a "new procedure" for certain classes of not too complicated actions where the stages of litigation are capable of abridgment. A judge will take personal charge of an appropriate case at an early stage and will issue directions as to the documents required, the admissions of fact, the further particulars to be given, and so on. A "summons for directions" has long been a common feature of those early stages of litigation which are so much more tedious and expensive than the layman knows; but hitherto it has been too mechanical an incident. The medical profession will be specially interested in two new provisions: first, that there will be power for the judge to limit the number of expert witnesses, and secondly, that it will be possible to remit to a special referee any question involving expert knowledge—in particular, any question as to the nature, extent, and permanence of an injury alleged to be due to the negligence of a party. The referee's report will be available to both sides; they can agree to accept it in whole or in part without further expense and one can easily imagine circumstances in which it will in effect terminate the litigation. If it is not thus accepted, it will still remain on record for the assistance of the court (subject to criticism by expert witnesses at the trial) and it is to have such weight as the court thinks fit if experts differ and the judge has to decide between them. One can forsee good use being made of the medical practitioner in the character of referee. He will be almost an assessor, in some sort an official independent witness having the authority well-nigh of an arbitrator.

The new procedure is not universally applicable. It will not apply to allegations of fraud or to actions for defamation, malicious prosecution, false imprisonment, seduction, or breach of promise, but will be available otherwise for ordinary actions in the King's Bench Division, the plaintiff's solicitor having authority to certify his case as fit for the new method. It is an approximation to the commercial court practice where Mr. Justice Bigham and others did wonders in narrowing the issues and shortening the hearing. The judge will have a discretion to order trial with or without a jury. Here is a prospect of economy, for trial without a jury means shorter trial, and length of trial means increased expense. Endless appeals are another source of expense and delay. The parties may under the new procedure consent to forego the right of appeal to the House of Lords, thus being content with the decision of the Court of Appeal or they may agree to limit their appeal to questions of law only. Something, too, will be done to meet another grievance of business men by enabling the judge to fix the date of a trial. Apparently two judges will sit continuously in London to take "new procedure" cases; intermittent absence on circuit will therefore not upset fixed arrangements. Documentary evidence, it seems, will be developed and proof by affidavit facilitated, subject to the safeguard for cross-examining a witness in a proper case.

Some of these new provisions will apply also to proceedings in the Chancery Division and some of the new procedure, it should be added, is not entirely new. Individual judges have already managed to introduce features like the limitation of expert witnesses. No one can say how far the new procedure will realise the reformers' hopes until it has been tried on a large scale. Meanwhile it may be accepted as a sensible attempt in the right direction. It goes as far, probably, as reform can be carried without fresh legislation by Parliament.

PLEURAL EFFUSION AND TUBERCULOSIS.

IN a statistical study Dr. J. F. Bratt and Dr. G. Ingebrigtsen have published in *Acta Medica Scandinavica* (vol. lxxvii., fasc. iv., 1932) some interesting facts about idiopathic pleurisy. The patients had been treated in the 12-year period 1918–1929 in a hospital in Trondheim and 313 out of the 388 were traced in the spring of 1931. Practically all these cases were associated with a pleural effusion, and in more than 50 per cent. the febrile period lasted a month or more. The cases were, therefore, as a whole, more serious than the average case of pleurisy treated at home. As many as 124 patients (32 per cent.) could refer to some source of tuberculous infection, but the percentage was much higher among the cases of pulmonary tuberculosis coming under observation in the same period in the tuberculosis service of Trondheim, where 692 (52 per cent.) of 1181 tuberculous patients gave a history of exposure to infection. Dr. Bratt and

Dr. Ingebrigtsen do not, however, jump to the conclusion from these figures that a considerable proportion of the cases of pleurisy were not tuberculous. They confine themselves to the remark that "it would, therefore, seem that the tuberculous clinical material was considerably more exposed than the pleurisy material." Of the 313 persons traced in 1931, as many as 200 were found to be well. In the interval 13 had died of non-tuberculous diseases, and 100 had developed tuberculosis which in 40 cases had already proved fatal. In nearly every case tuberculosis developed within three years of the attack of pleurisy, and it would, therefore, seem that after this interval patients who suffered from idiopathic pleurisy have not much to fear in the matter of pulmonary tuberculosis. This disease broke out a little more frequently among the patients whose pleurisy had been associated with fever lasting more than a month than among those whose febrile period had been shorter.

THE ROYAL ACADEMY.

THE annual display at Burlington House has received this year but a half-hearted welcome from expert judges, who find in the exhibition, despite much competent work, a tendency to retrogression—to an over-reliance upon accepted methods and a distrust of modern ideals. Such criticism cannot be passed fairly upon a distinctly large number of the landscapes. There are scattered up and down the walls many pictures where close observation has resulted in broad effects, and where the display of technical accomplishment has not been made at the expense of a beautiful whole. And these canvasses have gained by the more moderate size generally adopted. But the portraits in many cases merit the judgment. The fault here, when it has occurred, must be shared by the public, especially in the case of presentation pictures. For the representatives of those who have commissioned the pictures usually desire, and are sometimes able to insist, that the rendering of the subject should follow their leading, which has to be taken as the view of the donors. All portraits painted on commission, to meet the pleasure of a heterogeneous group of subscribers, must run the risk of compromise, and it is unfair not to recognise this fact. Sir Arthur Cope's successful portrait of Dr. Alfred Cox has been painted in circumstances that safeguarded him from the risk, for the members of the selection committee were intimately familiar with Dr. Cox in every phase of his activities, and at any point were able to judge how far the picture represented the man and his works. The other important canvass in the exhibition, having a medical man for its subject, is the presentation portrait by Mr. George Harcourt of Colonel Thomas Sinclair, M.P. for Belfast, and emeritus professor of surgery in the Queen's University, having held the chair for nearly forty years. This is not such a challenging picture as Dr. Cox's portrait, because Dr. Cox is depicted in the robes of an LL.D., whereas Prof. Sinclair is in morning dress; but it is a thoroughly competent and sympathetic depiction.

OPIUM SMOKING IN THE FAR EAST.

THE recommendations of the Bangkok conference [1] came under the consideration of the Opium Advisory Committee of the League of Nations at Geneva on April 22nd. It will be remembered that the conference was concerned with the findings of a commission appointed by the League to visit the Far East and to report on the steps which had been, or should be, taken to fulfil the treaty obligations of 1912 and 1925 to restrict and suppress the use of "prepared" opium for smoking. The obstacle presented to such achievement by the extent of the illicit smuggling of opium was also to engage the consideration of the commission. Dissatisfaction was expressed at the failure to fix a time within which the prohibition of import and export of prepared opium, as prescribed by the Hague Convention, should be effected; nor indeed does it appear that a term has been set from which the period of 15 years' grace, conceded by the Geneva Protocol of 1925, was to commence. The delegates of Italy and China denounced the conference and its recommendations as tending to encourage rather than to restrict the sale of opium for smoking. The American delegate urged prohibition of commerce in "prepared" opium, and distrusted the proposal for Government monopoly in the drug. He was twitted by the British representative, who remarked that "prohibition" had not been altogether satisfactory in the States. The export of Indian opium for smoking, though undergoing an annual reduction of 10 per cent., again led to criticism that this was inconsistent with the principles of our dangerous drugs legislation. Whereas heavy fines and imprisonment are meted out to those found in possession of opium for smoking in this country, considerable sales of prepared opium are still a source of profit to the Indian Government. Doubtless, smuggling from China and elsewhere continues to make the execution of a more stringent policy difficult, if not impossible, and the League's Far East Commission was probably right in saying "the radical method of dealing with illicit traffic in opium is by controlling effectively the cultivation of the poppy, allowing only such quantities to be produced, under international control, as are required for the world's medical and scientific needs."

[1] See THE LANCET, 1931, ii., 1143; Feb. 6th, 1932, p. 299; March 12th, p. 581.

SOCIOLOGICAL ASPECTS OF OBSTETRICS.

THE increasing interest being shown by obstetricians and gynæcologists in the sociological aspects of their specialty is reflected in the subjects discussed at recent meetings of the North of England Obstetrical and Gynæcological Society and the Edinburgh Obstetrical Society. At a meeting of the former society held in Liverpool on April 1st, Mr. Leyland Robinson, speaking on Insanity in Pregnancy, described his attempt to throw light on the problem by drawing up a questionaire from the obstetric standpoint and submitting it to a number of mental experts. In reply to the question whether child-bearing is an important factor in the ætiology of insanity, most of the alienists consulted failed to agree with the obstetrical view that pregnancy might exert a selective influence upon the mind of the pregnant woman. They attributed physical or mental stress rather to abnormalities of parturition, such as sepsis or toxæmia, with consequent exhaustion, than to the state of pregnancy itself. The following possible indications for the induction of abortion were given: (1) The onset of mania with great violence during pregnancy, since this might lead to dangerous exhaustion and it might be impossible to control the muscular movements. (2) The appearance of mental symptoms in a pregnant woman who had developed insanity during a previous pregnancy. (3) Mental disturbance founded on the conviction that death would ensue during labour, especially if associated with attempts at suicide or homicide. (4) Pregnancy

combined with physical and psychical complications. There was little evidence that induction of abortion had any positive therapeutic value in arresting the development of permanent insanity. Mr. Robinson stated that the majority of answers he received were strongly against the induction of abortion on eugenic grounds—that is, for fear of mental deficiency in the offspring—and his general conclusion was that the effect of reproduction upon insanity has received little scientific attention and was for the most part unknown.

This conclusion is in accordance with the doubts expressed by Prof. Sydney Smith, addressing the Edinburgh Obstetrical Society on March 9th, whether conditions such as nervous debility, neurotic and psychoneurotic states which have been put forward as good reasons for inducing abortion really provide just cause for the operation in the present state of the law. What constitutes a just cause is a difficult matter, as there are no legal pronouncements on the point, but up to recent years medical men were of opinion that abortion should be carried out only when it was necessary in order to save the life of the mother or to prevent serious impairment of her health. Lately, he said, there has been growing up a considerable body of opinion which is disinclined to bow to the ethics of past generations, and individual knowledge regarding sex matters has been greatly increased. Prof. Smith gave statistics to show how great was the prevalence of abortion at the present time, and how impossible it was, in this country at any rate, to get correct figures, since only a very few cases of procuring of abortion come to light. In Germany, where there had been a steady fall in the birth-rate with a rise in the abortion-rate, there had been many discussions on the advisability of advocating the legalisation of abortion on grounds other than medical. In Russia the incidence of abortion was so great after the revolution in 1917, and the maternal morbidity and mortality so appalling, that the Soviet Government in 1920 authorised the operation in certain circumstances. In that country abortion might be carried out only by medical practitioners and in public hospitals, it still being a crime for any unauthorised person to interfere with pregnancy; before abortion could be induced, the woman must make application to a representative board before authorisation is granted. In the year 1924–25, 254,000 abortions were carried out in Soviet Russia, whereas in 1929 in Leningrad 58,000 abortions were registered, and only 39,000 births. In Russia it was found that abortions were desired principally by multiparous women, and not among women pregnant for the first time. Legalisation of abortion had caused a diminution in maternal morbidity and death; the number of patients entering hospitals for uterine hæmorrhage was decreasing steadily, and the number of cases of puerperal sepsis was also said to have decreased. The Departmental Committee on Maternal Mortality and Morbidity came to the conclusion that abortion played a serious part in the production of puerperal sepsis and in the causation of maternal morbidity and death. Prof. Smith considered that we could effect an immense saving in maternal life and health if we could prevent ignorant interference with pregnancy, and that this could not be achieved by repressive measures. In his view the law of abortion ought to be changed so as to allow unfortunate and desperate women to place their case before some authority who could, upon sufficient cause being shown, authorise the termination of pregnancy under decent conditions instead of as at present forcing her to place herself in the hands of an ignorant abortionist. The opponents of this view would doubtless hold that those who furtively disobey the law must take the consequences, but if, as seems likely, the chances of permanent damage to the mother are very small where the operation is performed openly, the medical and eugenic indications for sanctioning abortion may have to be extended in the future to include the avoidance of mortality and morbidity.

THE SCIENCE OF EXERCISE.

IN our review columns this week two important works on the physiology of exercise are noticed both emanating from America, though one is a translation from the German. It is not surprising that most works on this subject and on physical culture in general are contributed by American writers, for the cult of physical development has been widely spread and fostered there. Chairs of physical education are endowed with the status accorded to other professorships, and elaborate courses of instruction are framed. Directors of physical education and hygiene—officials whose raison d'être has not yet been recognised in this country—join forces with physiologists and biochemists in a field of investigation where material and opportunities are unlimited. The lack of such subsidised and organised research must not belittle the importance of British activities. One has only to recall the pioneer contribution by Fletcher and Hopkins on lactic acid metabolism. The late Prof. F. A. Bainbridge's "Physiology of Muscular Exercise," published in 1918—the third edition of which was admirably rewritten in 1931 by Bock and Dill of Harvard—has served as an inspiration to all authors of subsequent text-books along the same lines. The classical work of Starling on the heart and of Haldane, Douglas and Barcroft upon respiration, is generally regarded as of supreme authority. Of more recent date A. V. Hill and his co-workers have been conspicuous in their fascinating experiments with Human Machinery, particularly in relation to the subjects of oxygen debt and the viscosity of muscle, while Adolphe Abrahams has been the exponent of what might be regarded as the clinical side of the subject. The liberality with which these British workers are quoted is ample testimony to the authority with which their results are invested. But interest in the theoretical side of athletics has not been so universal as in other countries, and it is time that the problems of physical education had a larger share of attention in academic circles.

THE HAMBLEDEN DEPARTMENT OF ANATOMY AT KING'S COLLEGE.

THE signs of closer amity between the various schools of the University of London were noted by the Earl of Athlone when, as Chancellor, he opened the new anatomy department of King's College which is appropriately named after the late Lord Hambleden. His reference to something a little sharper than friendly rivalry in the relations which at one time existed between King's College and University College was received with amusement, and his expression of the eager coöperation now achieved with appreciation. The department, he said, would stand as a witness of how closely interwoven were the schools of the University; medical students would pass on to King's College Hospital, Charing Cross, St. George's, or Westminster. Mr. W. R. Halliday, LL.D., principal of King's College, said that it was largely owing to the wise guidance as well as to the

generosity of the late Lord Hambleden that the College survived a crisis when its very existence was threatened, became incorporated in the University of London, and entered its present phase of steadily increasing responsibilities and usefulness. The major problem of accommodation had been that of the part of the College known as the south-east block, in which anatomy and chemistry existed in cramped and unsuitable quarters. The generosity of the London County Council to the University had enabled the Court to make substantial contribution to the cost of the new department, and to the completion of the first half of the building scheme. The second half of the scheme would be pressed to the earliest possible conclusion as far as funds allowed. The space now vacated by anatomy would have to be remodelled partly to effect improvements in the chemistry laboratories, and partly to provide more adequate common room and refectory facilities for students. The College had acquired a lease of 21, Surrey-street, the corner house facing the Embankment, where chemistry research laboratories would be grouped together and connected with the rest of the department by a bridge like that between the east wing and the north end of the College. The Principal was convinced that the decision against the removal of the College to another site was a wise one, and the dignity of the present buildings would certainly have been difficult to achieve in any other quarter of London. There was general agreement among those present with the Chancellor's praise of the manner in which two storeys had been added to the College building without interfering in any way with the æsthetic appearance of the quadrangle and Somerset House.

TUBERCLE BACILLI IN THE BLOOD.

THE cultivation of tubercle bacilli from the peripheral blood has been brought into prominence during the last two years by Prof. E. Löwenstein, of Vienna, and the two papers by Dr. Cicely Weatherall and Dr. J. N. Cumings, printed at the front of our present issue, are valuable contributions to the subject. Weatherall has first of all tested various methods of culturing the washed hæmolysed stromata of the blood of infected guinea-pigs in a synthetic fluid medium, on Dorset's egg, and on egg medium enriched by glycerin veal broth; for a portion of her tests she used the blood technique of Löwenstein as modified by Dr. H. Moos Schwabacher, who has reported successful results in advanced pulmonary tuberculosis. Weatherall has also made a series of cultivation experiments on the blood of sanatorium patients, most of whom were sputum-positive, and in no case did she succeed in cultivating the tubercle bacillus, though one successful result was obtained at a later stage by the use of Dreyer and Vollum's deep veal broth culture method with tuberculous guinea-pig's blood. Dr. Cumings also reports negative results in attempting 25 blood cultures from patients in which the Löwenstein technique was employed for preliminary treatment of the patient's blood before planting. So far as we are aware, therefore, the only positive results obtained up to the present time in this country with the Löwenstein technique are a small series described by Dr. Moos Schwabacher [1] and by Dr. K. Eckenstein on her behalf.[2] It should be emphasised that the Löwenstein technique consists in two operations: (1) the use of a special method of obtaining a dark brown residue from the blood withdrawn from the patient's vein, by hæmolysing the blood with weak acetic acid and treating with dilute sulphuric acid to destroy contaminants; and (2) cultivating this hæmolysed blood residue on a special egg medium to which potato, asparagin, and Congo-red have been added. This medium was described in our columns last year (1931, i., 1147). Various workers, including Weatherall and Cumings, have departed from the original technique in some details, such as the choice of media, so that the results are not in absolute strictness comparable with those of Löwenstein in Vienna; but they support the figures of some other workers in different parts of the world in that they do not confirm the Löwenstein results. These results may be regarded from two different angles: first, there is the high percentage of positive blood cultures obtained from patients known to be tuberculous; and, secondly, the positive cultures obtained in cases which are generally considered far removed from tubercle, such as acute rheumatism in childhood, disseminated sclerosis, and retrobulbar paralysis. As to the first point, the percentage of positives in known tuberculous patients is considerably higher than is found with the older guinea-pig test, and raises the question propounded by H. C. Sweany and M. Evanoff [3] in America, whether, after all, the culture medium may be more sensitive than the guinea-pig. With uncontaminated material this may conceivably be so, but there are pitfalls in the shape of acid-fast bacilli of feeble virulence, and of acid-fast saprophytes which we believe are by no means as uncommon in occurrence as has been supposed; indeed, one of the most interesting by-products of the work of Löwenstein, Sweany and Evanoff, and others, seems likely to be a wider clinical recognition of these organisms. From the point of view of the pathology of tuberculosis also, the old question is raised anew by Löwenstein's work: what is the nature of the tubercle bacillæmia? Are the bacilli discharged into the blood stream in an intermittent embolic fashion, or are they steadily persistent throughout the circulating blood? Are they present in all types of tubercle at all stages of the disease? We are not yet within sight of an answer to this important question which the new radiological-pathological aspect of X ray film interpretation is rendering highly controversial. As to the second point, it must be borne in mind that Vienna has a high tuberculosis incidence, and we must not expect necessarily to be able to reproduce Löwenstein's figures in this country. The difficulty is to account for the presence of true tubercle bacilli in some of the diseases in which he has found them, and at the same time for their absence, as he records, in healthy persons.

[1] THE LANCET, 1931, i., 1130, 1212. [2] Ibid., 1931, ii., 213.

WATER METABOLISM IN EPILEPSY.

IN a leading article a month ago [4] it was pointed out that although artificial dehydration may abolish fits in the epileptic subject, and water retention may produce them, it does not by any means follow that water retention is directly responsible for the spontaneous convulsion. Dr. F. B. Byrom,[5] from a study of the total exchange of water, sodium, potassium, and nitrogen during the different phases of epilepsy, concludes that the spontaneous convulsion is preceded by no changes detectable in 24-hourly measurements of these substances. The convulsion is, however, attended by a marked loss of body-weight, attributable to an extrusion of body fluid principally by the kidneys and to a lesser extent

[3] Tubercle, 1930, xi., 404.
[4] THE LANCET, April 9th, p. 782.
[5] Quart. Jour. Med., April, 1932, p. 289.

by the skin, a finding which confirms the observation of J. L. Gamble and B. Hamilton (1927), who showed that in epileptic children the excretion of sodium rose during the period of the convulsions, and concluded that this indicated a loss of extracellular water at this time. While it may at first sight seem difficult to reconcile Byrom's findings with those of I. McQuarrie (1929), who showed that ingestion of large amounts of water will precipitate convulsions in epileptic children (especially if diuresis is prevented by injection of pituitrin), he points out that such procedures cause not only change in bulk of body fluid but also secondary derangement of water-electrolyte balance. Indeed, when saline was substituted for water, McQuarrie found in subsequent experiments that convulsions were no longer produced when the fluid was retained. It may reasonably be deduced that the epileptic convulsion is not, as was at one time suggested, directly dependent on the degree of hydration of the body tissues, and that future research along these lines will be more concerned with possible local changes in water-electrolyte equilibrium.

A CASUALTY DEPARTMENT FORTY YEARS AGO.

Sir D'Arcy Power, in the Finlayson memorial lecture which he delivered recently at Glasgow, described the surgical side of the casualty department at St. Bartholomew's Hospital when it was in charge of Mr. C. B. Lockwood and himself in 1898. It was housed, he said, in the large hall facing Smithfield which is now used as a dining-room for the nursing and domestic staff. One third of the hall was allotted to the surgical and the rest to the medical casualty patients. The entrance to the hall was by six easy steps which led from Smithfield through two half-glazed doors. On the opposite side of the hall and exactly facing these doors was a small dispensary provided with counters and shut off by sash windows. The dispensary so closely resembled the bar of a public-house that many a drunken man was easily persuaded to take a double dose of house physic thinking it was a last glass before going home. It contained stock medicines brought over from the apothecary's shop in brown stoneware jugs holding 2, 4, 6, 8, and 12 gallons apiece. This dispensary was presided over day and night by two nurses—for many years by a mother and daughter of enormous size and weight known to generations of dressers as "the Fairies" because they moved lightly, were never out of temper, ill, or away from duty. They were untrained and were replaced in due course by "Sister Armitage" a highly skilled nurse and a magnificent organiser who had the power of subduing the most noisy and turbulent woman by sheer force of her personality.

The routine of the surgery was invariable. The patients began to assemble on the steps in Smithfield about 8.30 A.M., but whatever the weather there was no shelter and the doors were kept locked until the last stroke of nine. The assistant surgeon on duty entered the hall at five minutes to nine and saw that a porter had posted himself at the men's door and a nurse at the women's door. The two casualty physicians took their seats in the rooms allotted to them and the assistant surgeon stood with his back to the dispensary with the official whose duty it was to mark the time of arrival of the house surgeons and dressers. A queue, or rather a crowd, had assembled by this time on the steps and on the pavement. The man who sold bottles and ointment pots to those who had forgotten to bring them and the woman who was reputed to buy confection of senna and linctus for her open jam tarts, and the cod-liver oil for use in her neighbours' lamps, were in their places in the gutter ready to trade. At the last stroke of nine each door was held ajar to admit one patient at a time. The porter on the male, and the nurse on the female side, asked each patient what he or she complained of and referred him to the physician or surgeon as was thought fit. The diagnosis was rough and unskilled but was usually correct. Patients coming for the first time were directed to seats on either side of the dispensary where they waited until the assistant surgeon had interviewed them; those who had been treated previously took their places in a different part of the hall until they could catch the eye of the dresser under whose care they had been placed by their house surgeon. The prescription paper of each surgeon being of a different colour they were easily differentiated. The hall was usually filled by ten minutes past nine and the junior assistant surgeon having ascertained that the junior house surgeon on duty was present with his eight dressers, and that the senior house surgeon on duty was, at any rate, breakfasting, went to the benches where the new surgical patients were sitting. He made a rapid diagnosis, asked a few pertinent questions, and sorted them roughly into trivial, teaching, and serious. Patients with trivial complaints were handed over to the house surgeon who allotted them amongst his dressers; cases useful for teaching were sent over to the out-patient room there to await the arrival of the assistant surgeon of the day at 12.30; those who were seriously ill were taken straight into a ward. A fresh batch of patients was admitted from the street as often as the benches in the hall were empty until the clock struck ten. The outer doors were then closed though the morning's work often continued until midday or even later. By this time on a damp and foggy morning the atmosphere of the hall was poisonous and the odour pungent.

Bad and wasteful as was this condition of things, it was worse on the medical side. Dr. Robert Bridges, afterwards Poet Laureate, says that he saw and prescribed for 7735 persons during his year of office in 1877, and that 5330 of these were new patients. The average time spent on each case was 1·28 of a minute, and he congratulated himself on having given a separate audience to the troubles of 150 talkative women in three hours and a quarter. An even more wholesale method had been adopted a few years earlier. Mr. Frederick Wood, who was resident apothecary to the hospital from 1847–68, used, it is reported, to go into the hall at nine o'clock daily. As soon as the crowd was assembled and silence had been secured he would invite "all those with a cough stand up," and to them he gave a small cardboard ticket to be exchanged for a bottle of medicine at the dispensary. In like manner "all those with the bellyache stand up," and each received a ticket for house physic or castor oil. Long practice had enabled him to make a fairly correct diagnosis and he used to say with justifiable pride that, so far as he knew, he had never overlooked a case of strangulated hernia or of intestinal obstruction.

The whole system is now swept away. The King, as Prince of Wales, in 1907 opened a block of buildings in which the casualty department is adequately housed in a well-lighted and well-ventilated hall provided with suitable accommodation for male and female patients; in 1914 a corps of efficient almoners was appointed; in 1921 payment was demanded from those who were not absolutely destitute, and

a "follow-up" system was introduced in 1922. Since February, 1923, each patient has been interviewed, with the result that there has been a fall in the attendances from 175,000 to 65,000.

THE PRIME MINISTER'S EYESIGHT.

THE Prime Minister has entered a nursing-home for an operation upon his right eye. The condition of the left eye continues satisfactory, but an examination of the right eye undertaken on his return from Geneva by his previous advisers, with the assistance of Sir John Parsons and Sir William Lister, led to the definite opinion that operation upon the right eye should not be further delayed. The condition from which he is suffering has followed the expected course. It has been realised for some time that, sooner or later, operation on the right eye would be necessary, and the choice of the moment to deal with this eye has been dictated not so much by any urgency in the symptoms as by the desire to fit in with the Prime Minister's public engagements.

RELIEF OF THE FAMILY MAN.

ON April 29th and 30th, at a conference promoted by the Family Endowment Society at the London School of Economics, an impressive case was put forward for a reform of our method of payment for work done. The subject was approached from both the economic and the biological aspect, and the speakers included Sir William Beveridge, Prof. Gilbert Murray, Miss Eleanor Rathbone, M.P., Mr. R. A. Fisher, F.R.S., and Prof. Julian Huxley. It was shown that much greater progress has been made towards the desired object in many European countries, and in Australia and New Zealand, but that a patchwork beginning has been made in Britain. Put briefly, the aim is to replace the present system of equal pay for equal work, irrespective of family responsibilities, by one based on the principle of an equal standard of living for equal work, and to apply this principle not only to manual workers and artisans, but also to civil servants, members of the teaching professions, ministers of religion, and all salaried employees. At present, in this country the so-called "living" wage is supposed to maintain a man, his wife, and three children, and under this system a large proportion of the children are left below a reasonable standard of living. Three methods of financing family allowances were discussed at the conference. Family endowment paid for out of general taxation is impossible under present financial circumstances, though New Zealand makes allowances for children in excess of two in the family, when the income falls below a certain level. In Australia the tendency is towards a second method of fixing a basic wage for the maintenance of man and wife, and supporting the children by a levy on the employers of a certain percentage of the wages bill. This method, strengthened by "equalisation pools," so that an employer loses nothing by employing married men, is making rapid and continuous progress in France and Belgium. A third method is to extend the compulsory contributory insurance system to family endowment, and a scheme was described under which a weekly contribution of 9*d.* each by the employer, employee, and the State would produce an adequate maintenance allowance for the children. The conference was attended by a large number of representatives of bodies interested in social welfare, many of whom were evidently surprised to hear of the progress made towards family endowment in other countries. From the eugenic aspect it was pointed out that the scales are at present heavily weighted against parenthood, except in the case of the reckless section of the population, and that family endowment would gradually remedy the differential birth-rate by discouraging undesirable birth control on the one hand, and by tending to make responsible citizens of the reckless on the other. To those who might think the present time is inopportune for new schemes, it was pointed out that wages and cost of living are both changing and that, when "cuts" are restored, the family allowance system might well be considered. The case of the teachers was specially mentioned. Sir William Beveridge in his opening remarks emphasised family endowment as the best means of abolishing poverty and mentioned that all politicians paid it lip-service and professed approval. The Family Endowment Society (52, Romney-street, S.W.1) has much information in pamphlet form for those who wish to study this question, which all public health workers must regard as one of front-rank importance.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, May 24th; under the Presidency of Sir Norman Walker.

THE Linacre lecture is being delivered at Cambridge to-day, Friday, May 6th, by Dr. J. J. R. Macleod, F.R.S., Regius professor of physiology in the University of Aberdeen. His subject is the Control of Carbohydrate Metabolism.

IN the report of the National Physical Laboratory for 1931, reference is made to many activities which have a bearing on medical problems. Among the most important of these is the inspection of X ray departments in hospitals to ensure the safety of workers. This service is said to be widely used and appreciated. The laboratory is responsible for the custody of the radium belonging to the National Trust, and this work involves careful record of the history of the units into which the radium is divided. The difficulties relating to the establishment of an international unit of X rays (the Röntgen), which is essential for the advancement of X ray therapy, have now been resolved.

Sir William Wheeler, past President of the Royal College of Surgeons in Ireland, has accepted the invitation of the board of regents of the American College of Surgeons to deliver the Murphy oration in surgery at the opening meeting of the clinical congress, to be held in October next. The first John B. Murphy oration was delivered by Sir Berkeley Moynihan in 1920, and he was followed in subsequent years by Dr. William J. Mayo, Prof. Raffaele Bastianelli, Dr. George W. Crile, Drs. N. D. Royle and John L. Hunter, Sir Arbuthnot Lane, Prof. Archibald Young, Sir John Bland-Sutton, Prof. Vittorio Putti, Prof. D. P. D. Wilkie, Prof. G. Grey Turner, and Prof. A. H. Burgess.

THE Minister of Health, with the approval of the Prime Minister, has appointed Sir Arthur Lowry to act as Deputy Secretary to the Minister of Health, while Sir Ernest Strohmenger is seconded for service in the Treasury.

SPECIAL ARTICLES

UNDULANT FEVER PRODUCED BY BRUCELLA ABORTUS:

THE POSSIBILITY OF INFECTION FROM MILK AND THE PROBABLE EXTENT OF INFECTION.

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MUCH interest has recently been shown in the reports of cases of undulant fever in this country due to the *Brucella abortus*.

The first possible mode of infection is through direct contact with animals harbouring the organism. Farmers, veterinary surgeons, abattoir workers, and employees in the meat-packing industry may be thus infected. This is generally agreed to be the most potent source of infection and numerous cases have been reported from the United States and the Continent (Orr and Huddleson,[1] Kristensen,[2] Bierring,[3] Dubois and Sollier[4]). The proportion of the population of this country, however, exposed to this risk must be small.

The second possible source of infection, the drinking of milk containing this organism, must be regarded as the commoner, and it has been long known that *Br. abortus* localises in the udder of infected cows and may persist for long periods. Apart from the investigation of cow's milk in Manchester, carried out in 1926 by Wilson and Nutt,[5] little information has been available as to the proportion of milk in this country containing *Br. abortus*. An investigation into the prevalence of tubercle bacilli in milk carried out during the past year for the Department of Health for Scotland has provided the opportunity of inquiring also into the frequency of the occurrence of *Br. abortus* in market milk. The results obtained are of some value in amplifying the information already available.

The milk samples received were of three classes: pasteurised, "retailed," and "raw." The "retailed" milk was that sold in dairies in the city of Edinburgh. In many cases the sample was a mixed one containing milk from more than one source. The "raw" milk was that delivered to dairies and each sample came from a single source.

Methods.—The centrifuged deposit from 50 c.cm. of milk was emulsified in 6 c.cm. of saline solution. Of this emulsion 3 c.cm. were injected intramuscularly into each of two guinea-pigs. For the purpose of the primary inquiry regarding the presence of tubercle bacilli the guinea-pigs were killed four weeks and eight weeks respectively after injection. In examining for *Br. abortus* the second guinea-pig was used.

The spleen of the animal was seared with a copper spatula and cultures made from it on serum agar plates. These plates were incubated for three days at 37° C. in a jar from which 10 per cent. of air had been exhausted and replaced by CO_2 (Smith,[6] McAlpine and Stanley,[7] Wilson[8]). Colonies resembling those of *Br. abortus* were then sub-cultured on serum agar slopes which were incubated for three days in an atmosphere with 10 per cent. CO_2. Films were made from these cultures, and if the organism present resembled *Br. abortus* it was tested for the absence of fermentation properties on glucose and its agglutination by *Br. abortus* antiserum.

The results obtained were as shown in Table I.

As the procedure of isolating the organism from the inoculated guinea-pig took some time and involved detailed cultural tests it was hoped to show that corresponding results could be obtained by demonstrating the presence of specific agglutinins in the guinea-pig's serum. The results of the tests were as given in Table II.

TABLE I.

Type of milk.	Samples examined.	Positive.	Percentage positive.
"Raw"	86	17	19·8
"Retailed" ..	83	29	34·9

TABLE II.

Type of milk.	Samples examined.	Inoculated animals giving positive agglutination results.	Percentage.
"Raw"	63	14	22·2
"Retailed" ..	56	19	33·9

The lowest titre accepted was a serum dilution of 1 in 120, but the agglutination titre was usually much higher (1 in 480 to 1 in 3200). On two occasions the end titre was only 1 in 120, but in both these cases the result was confirmed by the culture of the organism from the guinea-pig. For control purposes the sera of 66 animals which had been inoculated with pasteurised milk were examined. None showed any agglutination. In some, but not in all, cases the serum was tested twice; once unheated and once after being heated to 56° C. for 30 minutes in order to eliminate the possibility of non-specific agglutination.[12] The general effect of heating the serum was to cause a slight fall in the titre. The impression gained, supported by the findings in the sera of animals inoculated with pasteurised milk was that this precaution was unnecessary.

The percentages obtained by cultural and serological methods showed a fairly close approximation.

An analysis of the findings elicited the following discrepancies. From the guinea-pigs inoculated with "retailed" milk the organism was isolated in five cases when the serological test proved negative. In no case when the serological test was positive did culture prove negative. These results would appear to be in accord with the findings of Carpenter[9] in human cases of undulant fever due to *Br. abortus*. Out of five cases in which he recovered the organism by blood culture he succeeded in showing the presence of agglutinins in three only.

The results obtained among the guinea-pigs inoculated with "raw" milk were at variance with the preceding results. In this class agglutinins were demonstrated in three cases when culture failed. In every case when agglutinins were present the organism was obtained on culture.

The figures obtained show a high proportion of milk to contain the *Br. abortus*. By cultural method the percentage for raw milk was 19·8 per cent. and for retailed milk was 34·9 per cent. As has been explained some of the "retailed" milk samples were "bulked" specimens which accounts for the greater prevalence in this group. The proportion found is considerably higher than that reported by Wilson and Nutt[5] in Manchester in 1926: 5·7 per cent. of unmixed milk and 8·8 per cent. of mixed milk.

From the small number of samples examined no definite conclusion can be drawn as to the relative reliability of cultural methods in inoculated guinea-

pigs and the demonstration of agglutinins in their serum. The indication is, however, that the demonstration of agglutinins in the serum of guinea-pigs is likely to afford a sufficiently reliable indication of the proportion of milk infected. It is a method which can readily be combined with the routine biological test for the presence of the tubercle bacillus in milk.

CLASSIFICATION OF STRAINS.

In view of the indications that the porcine type of *Br. abortus* is more pathogenic than the bovine variety (Huddleson and Hallman [10]) and that cattle may be infected with the porcine type (Plastridge and McAlpine [11]) it was decided to attempt to classify the strains isolated. Huddleson's dye plate method was used.[1]

In this method three nutrient agar plates are used, the first containing 1 : 100,000 parts of methyl-violet, the second 1 : 50,000 parts of basic fuchsin, and the third 1 : 50,000 parts of thionin. These will be referred to as V., F., and T. Typical reactions should be :—

—	V.	F.	T.
Bovine	+	+	−
Porcine	−	−	+++

The number of + marks signifies the relative amount of growth.

The results with 36 strains so tested showed them all to be of bovine type. Confirmation of this was found in the fact that during their first subcultures none of these strains grew freely under normal atmospheric conditions, but required a CO_2 concentration of 10 per cent. For control purposes nine bovine and six porcine strains obtained from the National Collection of Type Cultures were tested and found to give the reactions characteristic of their type.

The possibility of infection from a milk-supply in which over 30 per cent. of unsterilised mixed milk contains *Br. abortus* is obviously great.

DISCOVERY OF CASES.

It was thought that some indication of the prevalence of *abortus* infection would be obtained by examining blood samples sent to the laboratory for the routine Widal examination, such samples coming from patients whose symptoms were those of a continued fever. The blood was obtained partly from the city of Edinburgh and partly from the neighbouring counties.

Twenty-eight specimens from the city were examined. Of these, five agglutinated *Br. abortus*. The agglutination titres were: Case 1, 1 in 240; Case 2, 1 in 480; Case 3, 1 in 960; Case x, 1 in 240; Case 4, 1 in 6400. Two further samples agglutinated *Br. abortus* in a dilution of 1 in 30, but this was considered within normal limits. Three of the samples examined gave a diagnostic reaction with *B. paratyphosus* B. In none of these was agglutination of *Br. abortus* obtained.

Forty-seven specimens from the surrounding counties were examined. Of these, two agglutinated *Br. abortus* in high dilutions. The agglutination titres were: Case 5, 1 in 2500; Case 6, 1 in 1920. Four samples gave agglutination in a titre of 1 in 30, but as stated above this is not a significant result. Eight of the specimens submitted gave a diagnostic reaction with *B. typhosus*, two with *B. paratyphosus* B, and one *B. dysenteriæ* (Flexner-Y). None of these agglutinated *Br. abortus*.

The following data obtained from medical men in charge of the cases are illustrative.

CASE 1.—Oct. 28th, 1930. Male, aged 45. Tailor. Chief symptoms: severe headache and sweating, general body pains, high temperature without remissions. Duration of illness six weeks. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 240. This case was at first considered one of influenza.

CASE 2.—May 19th, 1931. Nurse, aged 54. Onset insidious, occipital headache, pain in back of head and neck, shivering in forenoon once at commencement of illness, spleen and liver not enlarged. Crepitations at bases of both lungs. Pulse-rate 88. Morning temperature sub-normal; evening, 101° to 101·6° F. Ill for one month and in poor health for six to eight weeks thereafter. Drank unpasteurised milk daily but not in large quantities. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 480.

CASE 3.—June 9th, 1931. Illness resembled a sharp typhoid infection and was followed by a long convalescence. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 960.

CASE X.—Jan. 1st, 1932. Boy, aged 11. Diagnosis established of broncho-pneumonia. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 240.

CASE 4.—Feb. 29th, 1932. Male medical student, aged 25. Onset sudden. Frequent rigors. Temperature down in morning, up in the early afternoon, down in the late afternoon, and up at night, 101·8° to 102° F. Considerable sweating at night. Severe frontal headache at night. Pulse-rate 88. No backache, no joint or muscle pains. Spleen and liver not enlarged, no chest symptoms, constipated since onset of illness.

Never drank milk by itself but took it in tea and coffee. Had worked with cultures of *Br. abortus* some years previously. Was in U.S.A. during summer but returned in September, 1931. Had no illness while in U.S.A. Only previous illness bronchitis two years ago. Widal reaction negative. *Br. abortus* Bang agglutinated by serum 1 in 6400, *Br. abortus* (hog 900) 1 in 800, *Br. melitensis* Arkwright 1 in 800, *Br. abortus* Barker 1 in 6400. (Emulsions all phenolised.)

Blood culture, March 3rd, 1932, 5 c.cm. blood inoculated into each of two flasks containing 50 c.cm. Stafseth's liver infusion broth.[14] One flask incubated for seven days in atmosphere of 10 per cent. CO_2. The other incubated for seven days under ordinary atmospheric conditions. At the end of this time the flask which had been kept under atmospheric conditions showed no growth. The flask which had been incubated in 10 per cent. CO_2 was contaminated by an aerobic sporing organism. It was discarded. The flask which had been incubated under normal atmospheric conditions was now incubated for a further seven days in 10 per cent. CO_2. The organism was then isolated. On subculture it would not grow under ordinary atmospheric conditions but required a concentration of 10 per cent. CO_2. On Huddleson's dye plates it gave the reaction of a bovine type. The blood for this examination was taken during an apyrexial period.

Urine culture, March 3rd, 1932. Method as above—organism not isolated.

Clinically this was an undoubted case of undulant fever and the diagnosis was confirmed by the bacteriological examination. The source of the infection is not clear. His stay in the United States of America and his handling of *Br. abortus* might seem too distant to be related to the illness. He had no previous illness which might have been a previous attack. This case was first diagnosed as influenza and later, when the temperature did not abate, as paratyphoid fever.

CASE 5.—March 3rd, 1931. Male, aged 38. Engineer. Onset insidious. When first seen by doctor had been unfit for two months. During this time complained of afternoon fatigue and night sweating. When seen complained also of pain in joints and in calves of legs. Had a cough. Temperature showed marked daily remissions—evening up to 103° F. Pyrexial attacks showed an average period of ten days with two-day remissions between attacks. Liver and spleen not enlarged. Constipated. Condition looked better than temperature warranted. Drank large quantities of unpasteurised milk. Widal reaction negative. *Br. abortus* Bang agglutinated by serum 1 in 2500, *Br. abortus* Barker 1 in 2560, *Br. abortus* T 1 in 1280, *Br. melitensis* Arkwright 1 in 160 (emulsions all of live organisms). Blood culture negative.

CASE 6.—June 25th, 1931. Male, aged 36. Soap-worker. Onset insidious. Duration of illness, 12 weeks. Intermittent headache, backache in left lumbar region, no joint pains, no pain in calves of legs. Rigors during first few days but not thereafter. Afternoon fatigue, night sweating. Temperature: generally raised in the evening and down in morning. Pulse-rate: generally increased. Cough: slight congestion at base of left lung. Skin rash chiefly in iliac regions. Was away from home during the month prior to onset of illness. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 1920.

The number of cases is too small for accurate deductions, but would seem to indicate that a definite proportion of illness which gives rise to the suspicion of enteric fever is undulant fever. If the three cases of paratyphoid B infection and Case x, diagnosed as broncho-pneumonia, are excluded from the city of Edinburgh series, it is found that out of 24 cases of suspected enteric four were cases of undulant fever. Similarly if from the series outwith the city the cases of enteric and dysentery are subtracted, it is found that out of 36 cases two were cases of undulant fever.

No inquiry has yet been carried out in the Edinburgh area as to the percentage of persons not suffering from a febrile illness who give agglutination reactions with *Br. abortus*. A comparison may, however, be made with the figures obtained by Cruickshank and Barbour [13] in Glasgow last year. Of 1522 sera examined they found 25 (or 1·6 per cent.) gave agglutination in a dilution of 1 in 20 or over and 11 in a dilution of 1 in 40 to 1 in 80.

TWO OTHER CASES.

Two cases occurring in the city of Edinburgh during the period under review, but not included in the above series, were investigated also in this laboratory by Dr. H. J. Gibson. In these the main features were:—

CASE 7.—Jan. 7th, 1931. Male, aged 34. Rubber worker. Condition discovered during examination for life insurance. Temperature found to be 102° F. but felt well and was working. Previous week had shivery attack once in late forenoon. After Jan. 7th feeling of chilliness about midday. Afternoon fatigue, night sweating. Evening temperature up to 102° F. Pyrexial periods of five to seven days with one or two day intervals. Bronchitis at commencement. No arthritis. Constipated. Spleen not enlarged. Duration of illness six weeks. No relapses. Widal reaction four weeks after onset, negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 3200. Blood and urine culture negative. No contact with animals. Home milk-supply pasteurised. Nineteen days prior to onset spent a day in Lancashire and drank raw milk there. (Case reported by Wishart and Gibson.[12])

CASE 8.—Sept. 6th, 1930. Male, aged 29. Customs officer. Onset: shivering attack while on motor-cycle tour. Severe headache, generalised pain in back and limbs. Remained indoors for a week; considered it influenza; did not see doctor. Recommenced work; morning felt fit, late afternoon chilliness, afternoon and evening feverish and unfit. Severe night sweating. Worked for two weeks and then saw doctor. Temperature when seen by doctor at evening surgery 104° F. Stiffness and pain on movement of shoulders and knees; muscular pain, especially in calves of legs. Night sweating severe throughout. No chest symptoms, no enlargement of spleen. Temperature: daily remissions. Evening, 99·2° F. to 100° F. Period of one week high temperature followed by two day remission, then two weeks high temperature followed by eight day remission, then one week high temperature. Widal reaction, seven weeks after onset, negative. *Br. abortus* Bang agglutinated by serum 1 in 240. A week later *Br. abortus* Bang 1 in 480, *Br. abortus* porcine type 1 in 200 (emulsions all of live organisms).

During work in docks dealt with imported bacon and scrap pork, but rarely, if ever, touched the meat. Home milk-supply pasteurised. In Glasgow, 27 days before onset, drank raw milk.

CASE 9.—August 13th, 1931. Male, aged 28. Medical man. A worker in this laboratory became infected with the disease. For four weeks he had felt unfit but continued at work. On August 13th his serum was examined and found to agglutinate *Br. abortus* Bang up to a titre of 1 in 1600. Widal reaction negative. His illness was typical and of a severe form, and he suffered during convalescence from arthritis of one of the small joints of his hand.

On August 28th *Br. abortus* Bang agglutinated by serum 1 in 1600. *Br. melitensis* 1 in 400. On Oct. 6th *Br. abortus* Bang 1 in 800. Convalescent. (Emulsions all of live organisms.)

Blood culture was performed on August 28th. 5 c.cm. blood inoculated into 50 c.cm. Stafseth's liver infusion broth [14] incubated for five days in atmosphere of 10 per cent. CO_2. Organism isolated. Grew readily under ordinary atmospheric conditions in subcultures. On Huddleson's dye plates gave reactions of porcine type.

In this case the source of infection was doubtful. He had been working with cultures of *Br. abortus* but not for some time prior to the onset of his illness.

That the organism may stimulate the production of specific antibodies without giving rise to illness is shown by my own experience. After working with infective material and cultures for ten months I found on August 13th that my agglutination titre for *Br. abortus* Bang was 1 in 320. On Jan. 18th, 1932, it was 1 in 400. On this date the serum of a laboratory assistant who had handled similar material to the same extent was examined. It gave no agglutination.

RESULTS OF THE INVESTIGATION.

The investigation is being continued and an endeavour will be made to determine what accessory factors are concerned in human infection. Although the proportion of raw mixed shop milk in Edinburgh containing *Br. abortus* has been shown to be about 35 per cent., only a very small number of cases of the disease have come to notice. The porcine strain of the organism is considered to be the more pathogenic to man, and in one of the two cases in which the organism was cultured it was of porcine type. But out of 36 strains cultivated from milk samples none would appear to be of porcine type. Plastridge and McAlpine [15] in an examination of 129 strains of *Br. abortus* from human sources found 63 to be bovine and 66 porcine. Taking into account the large amount of raw milk drunk and the comparatively small number of people handling pigs these figures would seem to be out of proportion to the chances of infection. Plastridge and McAlpine, however, justly point out that the porcine strain is more easily cultivated than the bovine. The relative virulence of strains isolated from milk have to be examined, and also the question of natural immunity.

As far as the investigation has gone it would seem to show:—

(1) That the possibility of infection from retailed raw milk is considerable. In Edinburgh 34·9 per cent. of such milk samples have been found to contain *Br. abortus*.

(2) That the test for the presence of *Br. abortus* agglutinins in the sera of guinea-pigs inoculated with milk provide a sufficiently accurate method of estimating the prevalence of *Br. abortus* in milk samples. This method can easily be adopted during the biological examination of milk for tubercle bacilli.

(3) That of 36 strains of *Br. abortus* isolated from milk in Edinburgh all were of bovine type.

(4) That a definite proportion of febrile illnesses which resemble enteric fever is undulant fever. In Edinburgh out of 24 such cases four were cases of undulant fever.

My thanks are due to those physicians in Edinburgh and neighbourhood who have permitted me to include their cases, to Dr. H. J. Gibson for the reports on Cases 5, 7, and 8, and to Prof. T. J. Mackie for his encouragement and advice. I also have to acknowledge the courtesy of the

Curator of the National Collection of Type Cultures in supplying me with strains of *Br. abortus*.

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REFERENCES.

1. Orr, P. F., and Huddleson, I. F.: Amer. Jour. Pub. Health, 1927, xvii., 1242.
2. Kristensen, M.: Abstracted in Bull. of Hyg., 1929, iv., 112.
3. Bierring, W. L.: Jour. Amer. Med. Assoc., 1929, xciii., 897.
4. Dubois, C., and Sollier, N.: Bull. de l'Acad. de Méd., 1930, civ., 166.
5. Wilson, G. S., and Nutt, M. M.: Jour. Path. and Bact., 1926, xxix., 141.
6. Smith, T.: Jour. Exper. Med., 1924, xl., 219.
7. McAlpine, J. G., and Slanetz, C. A.: Jour. Infect. Dis., 1928, xliii., 232.
8. Wilson, G. S.: Brit. Jour. Exp. Path., 1931, xii., 88.
9. Carpenter, C. M.: Jour. Infect. Dis., 1926, xxxix., 220.
10. Huddleson and Hallman, E. T.: Ibid., 1929, xlv., 293.
11. Plastridge, W. N., and McAlpine: Ibid., 1931, xlix., 127.
12. Cruickshank, R., and Barbour, W. J.: THE LANCET, 1931, i., 852.
13. Wishart, W. H., and Gibson, H. J.: Brit. Med. Jour., 1930, i., 861.
14. Huddleson, Hasley, D. E., and Torrey, J. P.: Jour. Infect. Dis., 1927, xi., 352.
15. Plastridge and McAlpine: Ibid., 1930, xlvii., 478.

BRITISH ORTHOPÆDIC ASSOCIATION.

THE NOTTINGHAM MEETING.

AT the spring meeting of the British Orthopædic Association in Nottingham on April 22nd and 23rd, a large series of cases was demonstrated by Mr. F. CROOKS and Mr. MALKIN at the General Hospital and at the Harlow Wood Orthopædic Hospital, and three clinical problems were discussed.

Suppurative Arthritis of the Hip.

Mr. FREDERICK CROOKS (Nottingham) presented a series of 12 cases of pyogenic infection of the hip-joint. Early drainage was necessary, he said, not only to save life, but to minimise epiphyseal destruction. The classical route for drainage was by a posterior incision, but in half of the cases abscesses pointed in front of the joint and an anterior incision had been used. After operation the limb was fixed in abduction, and traction was maintained to prevent pathological dislocation. There was no mortality, and the end-result in 8 of the 12 cases had been a stable hip. In infants there was usually destruction of the epiphysis and of the neck of the femur, and often an unstable dislocation was inevitable.

Mr. D. MCCRAE AITKEN (London) advised a short spica and not a calliper as an ambulatory splint. In unstable cases the ring of the calliper pushed the neck of the femur out of the acetabulum and aggravated the tendency to dislocation. Operative stabilisation should be performed when the patient was 14 or 15 years of age by constructing a new roof over the upper end of the femur.

Mr. R. C. ELMSLIE (London) doubted whether any attempt at operative stabilisation was of value. The only measure he would advise was a bifurcation osteotomy, and although this stabilised the limb satisfactorily it had the serious disadvantage of increasing the shortening. The best end-result which could be secured was a bony ankylosis in good position.

Dislocation of the Patella.

Mr. S. A. S. MALKIN (Nottingham) reported seven cases of outward dislocation of the patella. In five cases the displacement was habitual and of congenital origin, and in two cases recurrent. Normally, in consequence of the erect posture of man, the oblique axis of the quadriceps maintained an angle with the vertical axis of the patellar ligament, and favoured outward displacement of the patella. This was still further exaggerated if knock-knee was present. Successful treatment demanded not only replacement of the patella, but realignment of the quadriceps with the patellar ligament; in congenital cases it was necessary to dissect and free the vastus externus, and in all cases it was advisable to displace the tubercle of the tibia inwards and downwards. The downward displacement compensated for under-development of the external condyle of the femur. If knock-knee was present, an osteotomy to correct it was essential, but the correction could be more easily secured in congenital cases by deferring osteotomy until after replacement of the patella and realignment of the quadriceps. The operation, which he had learnt from Mr. Elmslie, had been performed in six cases. After several years there had been no recurrence of the dislocation, and a normal range of knee movement was restored.

Mr. ELMSLIE said that the important features of his operation were (*a*) dissection and replacement of the vastus externus, (*b*) displacement of the tubercle of the tibia inwards and downwards, (*c*) transference of a pedicle of joint capsule from the inner to the outer side, (*d*) the construction of a flap of capsule to hold the rectus femoris inwards.

Mr. H. A. T. FAIRBANK (London) said that osteotomy of the femur was always necessary in habitual dislocation, but not always in recurrent dislocation of the patella. He had frequently noticed in recurrent dislocation that although there may be no genu valgum with the knee extended, this deformity was evident when the knee was flexed.

Fractures of the Spine.

Mr. CROOKS reported 44 recent cases of fracture of the spine. The mortality was 25 per cent., and in almost 50 per cent. of the cases the spinal cord had been injured. Reduction of the fracture was advocated, and emphasis was laid on the ill-effect of allowing patients to lie in bed for several weeks without active treatment. In such circumstances functional complications commonly appeared, and energetic exercises in the gymnasium were necessary to combat this. Twelve cases were demonstrated of crush fractures of the spine which had not been seen until several weeks after the accident, so that a slight kyphotic deformity remained. Although good movements were restored, only one of the 12 was free from pain, and only two had resumed work.

Mr. C. HOPE CARLTON (London) said that the results of treatment of crush fractures of the spine had been greatly improved since the introduction of the technique described by Watson Jones, but he had found difficulty in some cases in correcting the last few degrees of wedging of the vertebra.

Mr. W. A. COCHRANE (Edinburgh) said that he had used Watson Jones's technique in reducing fractures of the spine, but in two cases paralytic ileus had arisen, and he attributed this to the hyperextension, and the lack of abdominal support during reduction. The use of a ventral hammock assisted in preventing this.

Mr. R. WATSON JONES (Liverpool) drew attention to the constancy with which pain persisted, if the wedging of the crushed vertebra was not corrected. Records were now available of over 50 fractures of the spine which had been reduced by his method, and provided that the deformity was fully corrected and recurrence prevented by the wearing of a plaster jacket for a sufficiently long period, there was no pain, and fully 75 per cent. of cases resumed heavy work. Consolidation of fractured vertebræ was slow, and the plaster jacket should be retained in simple

crush fractures for four months and in extensively comminuted fractures for six months. Energetic exercises could be practised throughout this time, and in uncomplicated cases recumbency was not necessary for more than a few days. Paralytic ileus might arise in any case where a plaster jacket was applied under anæsthesia, and was due not to the hyperextension, but to the anæsthetic and too liberal administration of morphine. No anæsthetic should be used.

Mr. S. BLUNDELL BANKART (London) emphasised the necessity for immediate reduction. The pain of an unreduced crush fracture of the spine could only be relieved by operative fusion of the affected area with a bone graft. The best treatment for fractures of the lumbar transverse processes was to ignore the fracture and treat the case as a simple muscle injury, in order to avoid functional complications and to prevent adhesion formation.

Mr. W. H. TRETHOWAN (London) said that persistent chronic backache was inevitable if crush fractures of the lumbar spine were not reduced. Since the pain was due to mal-alignment of the spine, he doubted whether bone grafting would always relieve it.

Mr. NAUGHTON DUNN (Birmingham) advocated temporary splintage of the spine in order to decide whether bone grafting would be successful or not. Operative treatment could only succeed in those cases where pain was controlled by wearing a spinal support.

MEDICINE AND THE LAW.

A Doctor's Dog.

NOT long ago the House of Lords dealt with a claim for damages where a dog, left in an otherwise empty motor-car, had leapt at a window and, by breaking the glass, had caused a passer-by to lose the sight of his eye. In effect their Lordships decided that the owner of the car had not been at fault, there being nothing against the dog's previous good character. A somewhat similar claim has been made against a medical practitioner who left his car outside Queen's Buildings, Scovell-road, Borough, S.E., with his Sealyham terrier tied up inside in such a way that its muzzle could protrude only 3 inches beyond the car door. Two children came out of an adjoining house and leaned over the car to look at the dog; one of the children was bitten, and damages were claimed in respect of her injuries. There was important evidence that children were in the habit of playing in the street at this place, that the doctor had warned them not to interfere with his car or tease his dog, and that the injured child had heard the warning. Even more important was the absence of any evidence that the dog was of a ferocious nature, either to the doctor's knowledge or at all. It was stated that the doctor had said "the dog might bite"; but this, as Mr. Justice Du Parcq observed, did not mean that the dog was ferocious; any dog may bite if interfered with, especially if guarding its master's property. At the trial of the action on April 15th the jury disagreed. Apart from the question of damages, if any, they were asked five questions. They were unable to agree in answering any of these except that they answered "No" to the question whether the child had been guilty of contributory negligence. The other unanswered questions were: (1) Was the dog of a ferocious disposition? (2) If yes, was the defendant aware of its ferocity? (3) Was the defendant negligent in leaving the dog tied up in the car? (4) If yes, was his negligence the cause of the child's injuries.

In these conditions defendant's counsel applied for judgment. He emphasised the absence of evidence of ferocity, and he contended that every car-owner is entitled to leave a dog to protect his car; if the dog is tied in such a way that it cannot bite passers-by but only persons who trespass by touching or entering the car, there is no breach of duty and no negligence. On the other side it was argued that the dog was a potentially dangerous thing placed on the highway where it was likely to be a temptation to children. The learned judge inclined to give some weight to this argument; a child, he said, might naturally be tempted to look more closely at a car with a dog in it than an adult would. "A dog cannot differentiate between a little girl, an inquisitive man, a thief, or a policeman who wants to make inquiries." It was possible that a jury might think the owner was therefore bound to take such precautions as to make an accident impossible. Consequently he could not give judgment for the defendant; the case must be treated as one in which the jury had failed to agree; in other words, the plaintiff is at liberty to bring the action over again.

Death Sentence on Youth of Eighteen.

During the last 40 years, said Sir John Anderson before the Committee on Capital Punishment, nobody under the age of 18 years has been executed in England. The Children and Young Persons Bill proposes to make this age-limit of 18 statutory. Jacoby was 18 years and 11 months when executed. One of the conditional recommendations of the Committee was that no one should be executed under the age of 21. Youth is, of course, one of the elements specially regarded by the Home Office in advising the commutation of the death penalty. In a recent case before Mr. Justice Travers Humphreys a youth of 18 was found guilty of murdering a girl of 6. Her body was found in a tin box; examination showed that she had been outraged and strangled with a cord. The accused's history showed abnormality. He was sent to a reformatory school at the age of 9 for five years, after attacking a child 2 years old whom he had left in a brook with his head cut open. The accused's paternal grandfather and maternal grandmother had been inmates of a mental hospital. His father said the boy showed no sense of causing pain or of fear, and had once put a cat down a street grid. Medical evidence, called on behalf of the defence, was to the effect that he was of the moron type, a rather higher-grade mental defective, subject to alternate periods of dullness and excitement. The witness who gave this evidence said that the crime must have been committed in a frenzy of sadistic lust. The judge told the jury that this was not a defence of insanity. The law, said the judge, provided nothing on the point of insanity concerning uncontrollable impulses. While this summing-up was strictly accurate, it may be remembered that the Atkin Committee on the Criminal Responsibility of the Insane (reporting after the case of Ronald True) recommended that the law should recognise irresponsibility on the ground of insanity where the act was committed under an impulse which the prisoner was, by reason of mental disease, in substance deprived of any power to resist. The Committee added that it might require fresh legislation to bring this principle into effect. No such legislation has, however, been passed; nor does the Home Office appear to have made much effort in this direction. In the recent case described above, Mr. Justice Humphreys stated that he should report to the proper authorities, who would take into account the question of the accused's age and of any abnormality in his mental equipment.

BRITISH HEALTH RESORTS.

THIRD REGIONAL CONFERENCE.

THE conference held last Saturday was the third of a series designed to bring together medical men and representatives of local interests to consider the medical values of the region. The avowed aims of the British Health Resorts Association which summoned it are briefly these; to formulate the medical case for the British health resorts in the prevention and cure of disease, to differentiate on a scientific basis the various regions and places, and to make this information known to the medical profession and the public. These aims were well achieved during the week-end when the municipal fathers of Weymouth, Poole, and Bournemouth afforded lavish opportunity for a study of the strip of coast from Hengistbury Head on the east to Portland Bill on the west. The headquarters of the Association were nominally at the Bath Hotel in Bournemouth, and the formal discussions took place at the Town Hall, but in point of fact the whole of the week-end was given up to a roving conference over this western section of the southern coastal region, in which the local health officers and practitioners played a leading part.

At the first of the two business sessions the tone was set by a remark contained in a letter from Lord Meston, chairman of the Association, who was detained at the League of Nations meeting: We have, he wrote, lived too long in an inferiority complex about our own health resorts. And Sir Thomas Oliver, who took the chair at this session, was well within the mark when he asserted that there are few islands with such an imposing coast-line and such attractive scenery as our own, the number and variety of the coastal resorts being unsurpassed in any country. This session was noteworthy for a remarkable analysis by Lieut.-Colonel W. Byam of the various reasons given to him by patients in refusing to stay in England when advised to do so. These reasons, in descending order of frequency, were: (1) Climate; (2) the English standard of cooking; (3) the unfashionableness of home resorts; (4) the need for a complete change of scene; (5) the lack of amusements; (6) the ban on gambling; (7) the greater cost at home; (8) the absence of facilities for a cure. Colonel Byam said he regarded the third excuse as really the most potent, for since it is the wives who decide where to go, a health resort must be fashionable. The fashionable crowd is, he added, a great attraction for the seekers after health. Others who took part in the discussion concentrated rather on item 8, being the absence of facilities for a cure. Dr. Fortescue Fox pointed out how far we are behind the continent in organising our resorts as centres of convalescence in the wider sense, for those commonly called convalescent constitute but a small group in comparison with those who are never really well or actually ill, but yet have a right to hope for complete recovery. It was this vast and increasing number of subnormal people, many of them doing the best work in the community, for whom the health resort should organise its facilities. Dr. Manson-Bahr raised the question of diet at the British health resort, which was the thing that bothered him. No one seemed to be capable of making liver soup for his patients. There was no one to supervise the diet in the case of (say) sprue, where treatment was almost entirely dietetic. His difficulty would be met if there was a local panel to whom he could apply for help and information. He and others were in sympathy with Colonel Byam's plea for a centre on this strip of coast where modern medical diagnosis and treatment could be carried out; a nucleus providing facilities to every practitioner in the district. For such a purpose London hospitals with their noise were becoming more and more impossible. Dr. R. A. Young called upon the local medical profession to tell him more of what in their experience were the indications for regional treatment, what patients they should send, and at what time of the year; for, he said, you have on this coast many varieties of climate within a small area, and what will suit residual catarrh will not be equally good for emphysema. On sending down a patient he would like to be able to say to him: You will get specialised treatment there for your cough, and there for your shortness of breath, and so forth. How happy he and his fellow-consultants would be to give an honoured place on their waiting-room tables to resorts willing to provide facts like these. Some of these difficulties were set at rest later by Dr. Watson Smith's assurance that the speakers had not realised what was already being done locally. Practitioners, he said, knew all about liver soup and even the Gerson diet—either could be provided like any other dietary at any time; and he added some definite information about the climatic qualities of places like Canford Cliffs and Swanage.

It is worthy of note that the conference definitely discarded any narrow or parochial policy. We have, said Dr. Alfred Cox from the chair at the afternoon session, to think regionally. There must be regional coöperation and no petty jealousies. Colonel Elliot, whose letter to the *Times* last September set the whole movement going, disclaimed any such policy. We are, he said, in no sense hostile to continental or other interests; we are willing to coöperate with the foreigner if he is willing to coöperate with us. And at the great banquet the deputy-mayor of Bournemouth, Alderman C. H. Cartwright, speaking for all the resorts represented, said they did not claim patronage on grounds of patriotism; they wanted the public to go to British resorts because they preferred them. This led some of the consultants present to put in a plea for the large number of patients who cannot afford the tariff of an expensive hotel. There is an impression, all too well founded, that they can get better value for their money at many continental resorts than they do in this country. This again may be no more than a question of collating and supplying information about the accommodation available for all classes of the community and for every length of purse.

Finally, the outcome of the afternoon session was the unanimous adoption of a resolution to form a local branch of the British Health Resorts Association for the southern region, western section, nominations being received of both medical and lay members from Christchurch, Bournemouth, Poole, Swanage, and Weymouth. The mayor of Bournemouth, Alderman P. M. Bright, J.P., consented to act as convener.

BOLINGBROKE HOSPITAL, WANDSWORTH COMMON.—The old portion of this hospital is reported to be "daily becoming worse"; the main kitchen, dining and sitting-rooms, and servants bedrooms are gloomy and dilapidated. Rebuilding will cost £70,000, towards which the King's Fund has promised £1000. To tide over some of the difficulties temporarily Sir James Carmichael, the chairman of the board, has undertaken to defray the entire cost of an extensive scheme of improvement. Last year there were 2373 new in-patients and 13,495 new out-patients. The total weekly costs of the in-patients was £3 0*s.* 9*d.* and the total cost of each occupied bed £158 9*s.* 9*d.*

LONDON VOLUNTARY HOSPITALS COMMITTEE.

A YEAR'S WORK.

THIS Committee [1] which was appointed by London voluntary hospitals for the purpose of consultation with the London County Council, as provided by Section 13 of the Local Government Act, 1929, has issued the following report for the year ending March 31st, 1932.

During the period under review the Committee have been in constant communication with the Central Public Health Committee of the London County Council. Important decisions have been arrived at.

Acting upon the suggestion of the Voluntary Hospitals Committee, it has been agreed between the two committees to conduct a survey of the medical, surgical, and ancillary services in the county. The standing committee of the metropolitan borough councils have expressed their willingness to coöperate by supplying information relating to services for which the borough councils are responsible. The survey, which is in progress, will show the number of institutions in each area, distinguishing between municipal and voluntary; the accommodation available for each class of case; the staffing of each institution; the area from which patients are drawn; the facilities for extension; the need for further developments and other useful details. The task is one of considerable magnitude, as the survey involves institutions comprising some 100,000 beds. It is, however, hoped that it will be completed in the course of the next two months. It will provide the first authoritative description of the medical, surgical, and ancillary services of the county. The need for coördinated information is obvious. Without it the best use cannot be made of the facilities provided by each system, overlapping cannot be avoided, and economical effective progress is impossible. Further, without such a survey it is impossible to give effect to Section 13 of the Local Government Act, 1929, which provides for consultation between the municipal authority and the voluntary hospitals within its area.

Discussions have taken place between the two committees concerning medical education. As a result the Public Health Committee decided to continue existing arrangements between individual teaching hospitals and municipal hospitals. The extension of these arrangements is now being considered by both committees, and it is hoped that some more thorough and satisfactory means may shortly be devised which will enable a teaching hospital to be linked to a municipal hospital if and when desired.

The voluntary hospitals have welcomed the decision of the Public Health Committee to appoint salaried short-term resident house physicians and house surgeons for service in municipal hospitals, being of opinion that these appointments will provide valuable post-graduate experience. The two committees have also discussed various proposals made by the County Council for increasing accommodation at certain municipal hospitals, and for the establishment of special units such as those for thyroid cases and plastic surgery.

Projected scales of salaries and wages in municipal institutions have also been the subject of consideration. Statements regarding these matters have from time to time been issued to the Committee's constituent hospitals.

[1] The Committee consists of forty members with Lord Riddell as chairman and Dr. Geoffrey Evans as honorary secretary. The other medical members are: Mr. A. Lawrence Abel, Lady Barrett, Dr. Edmund Colbeck, Mr. Robert Davies-Colley, Prof. L. S. Dudgeon, Mr. Charles Gibbs, Mr. E. L. Pearce Gould, Dr. A. M. H. Gray, Dr. Philip Hamill, Sir Henry Jackson, M.P., Dr. J. M. H. MacLeod, Mr. M. S. Mayou, Mr. Robert Milne, Mr. D. Denham Pinnock, Dr. Arthur Porter, Dr. Harold Pritchard, Mr. D. W. Roy, Dr. E. Bellingham Smith, Mr. T. G. Stevens, and Dr. C. M. Wilson.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

LOANS TO UNIVERSITY STUDENTS.

THE education committee of the Edinburgh town council have announced a scheme of loans to University students. These loans would cover attendances at all the courses of the University as well as at the College of Art, Veterinary College, Agriculture College, College of Domestic Science, and the Training Colleges. Edinburgh is the first burgh to adopt the scheme, which is in force in seven Scottish counties, Dunbarton being the pioneer. Applicants must be fully qualified for admission to the institution and course they are to attend. They and their parents or guardians must be resident in the city of Edinburgh at least twelve months prior to the application. They must supply to the committee a certified statement or declaration as to their income or other financial circumstances. They must sign an obligation to repay to the committee, within the time specified, all sums advanced, and this obligation must be endorsed by a responsible person or responsible persons accepted by the committee as a guarantor or guarantors for the due repayment of such sums. Before making payment of any instalment, the education committee may require evidence that the student is making reasonable progress with his studies, and in the event of their not being so satisfied, or of the student being guilty of serious misconduct, or of the student being no longer in a position to require such assistance from the committee, they reserve the right to suspend or discontinue the payments. In the event of failure to complete the course, the total amount advanced shall become repayable immediately. Unless in exceptional circumstances, and with the approval of the committee, the student must not hold any other grant, allowance, or bursary. The amount of the loan shall be in the discretion of the committee. The maximum amount of the loan and the normal periods of repayments are specified, and the sums vary from £25 to £150.

At present, the local education authorities give allowances to suitable students, and in administration no doubt difficulties will arise between the free grant and the loan; but there should be a place for both. In the early days of the Carnegie Trust relief of fees, any student could apply and receive; but later the University Carnegie Trust laid down the strict condition that where the student had not performed the work of the class he had to refund at once the amount received. This had a very wholesome effect on the work of the classes. There is talk of establishing competitive examinations both for the public bursaries or allowances and for the new grants.

Incidentally, the University of Glasgow advertised some time ago that the number of medical students to be admitted for the next winter session would be strictly limited. No doubt this comes of two facts: first, that the University is not prepared to extend its teaching staff to meet the rising demand; and, second, that care must be taken not to overcrowd the

medical profession in the same way as the teaching profession in Scotland has become overcrowded.

LOW SCOTTISH BIRTH-RATE.

The birth-rate for Scotland during the first quarter of this year was 19·0 per 1000 of the estimated population, being 1·1 above that for the previous quarter, but 1·0 less than the average for the corresponding quarter of the previous five years. It is the lowest birth-rate recorded in Scotland for any first quarter since 1919, and with that exception is the lowest first quarterly rate on record. The death-rate, 16·2 per 1000, is 4·0 more than in the previous quarter, but is 1·2 less than the average. The marriage-rate, 6·3, is 0·3 below that for the previous quarter, but 0·3 above the average. The infantile mortality-rate, 113 per 1000 births, is 37 above the rate for the previous quarter, but is one below the average.

THE EDINBURGH CHAIR OF PSYCHIATRY.

Dr. D. K. Henderson, physician-superintendent of the Glasgow Royal Mental Hospital, has been appointed physician-superintendent of the Royal Edinburgh Hospital for Mental Disorders, in succession to the late Prof. G. M. Robertson, and has also been appointed to the chair of psychiatry in the University of Edinburgh. Prof. Henderson graduated in medicine at Edinburgh in 1907, and had the advantage of studying under the late Sir Thomas Clouston. He worked with Prof. Adolf Meyer for six years at the Psychiatric Institute, New York, and later at the Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore. He also studied under Prof. Kraepelin and Prof. Alzheimer at Munich, and with the late Sir Frederick Mott in London. During the late war he attained the rank of major in the R.A.M.C. His present post he has occupied since 1921, and he has also been lecturer in psychiatry in the University of Glasgow. Last year he delivered the Morison lectures on social psychiatry before the Royal College of Physicians of Edinburgh.[1] His range of illustration and catholic outlook, as well as his balanced criticism, made a great impression.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

THE GERMAN SURGICAL CONGRESS.

THE congress of the German Surgical Association was held as usual in Berlin during the week after Easter, with Prof. Voelker (Halle) as president. The first official subject of discussion was the surgical aspects of the liver, introduced by Prof. Henschen (Basle). He pointed out that in hepatic disorders with jaundice it is hard to say whether a patient will be able to stand narcosis or the shock of an operation. The disorder, whether functional or organic, prevents the liver from taking its share in detoxication and elimination—a share which should be large if renal efficiency is for any reason reduced. Biliary peritonitis, it was stated, has a doubtful prognosis, the toxicity of the bile varying considerably. Patients with hepatic disorder are apt to project their pain into the region of the appendix so that it is often regarded as a sign of acute peritonitis. On the other hand, acute appendicitis associated with hepatic disorder is liable to lead to suppuration of the liver, or acute atrophy. Allergic affections of the liver simulate acute cholecystitis or cholelithiasis, yet have no anatomical basis. In those cases cholecystectomy is unsatisfactory and cholecystotomy should be performed instead, so as to relieve the liver and give it a chance to recover. Prof. Brugsch (Halle) said that the depth of jaundice is decisive for the success of an operation; if icterus is long continued, damage of the liver may be presupposed. With mechanical occlusion of the bile-duct surgical intervention must not be postponed unduly. To diminish the danger of an operation the glycogen content of the liver must be increased by a diet of carbohydrates and albumin. Transfusion of blood, and in hepatic coma of phosphate, is recommended, while the activity of the liver should be promoted with Decholin.

The second official subject was gangrene of the extremities, introduced by Prof. Ceelen (Bonn). For a patient to recover from commencing gangrene it is essential, he said, that the cells of the affected organ should be intact and should have an adequate blood-supply. Gangrene caused by embolism and gangrene due to syphilitic endarteritis are especially dangerous. The reason why gangrene is commoner in the legs than the arms is the erect posture and the longer time required for the blood to flow from the heart to the legs. Diabetic gangrene is caused by sclerosis of the media, by which the circulation of the blood is locally retarded and the elimination of toxic substances is made more difficult. Juvenile gangrene, according to Ceelen, is not due to primary thrombosis with secondary inflammation but to a condition similar to chronic septic rheumatism caused by streptococci. A special constitutional liability to rheumatism must be present if juvenile gangrene is to develop. The surgeon must ascertain very early the symptoms in order to remove the causes. Dr. Roepke (Wuppertal), discussing the various causes of gangrene, said that early diagnosis and prophylaxis was essential to avoid amputation. Periarterial sympathectomy has not been so successful as was hoped, but the discovery of circulatory hormones has provided a powerful remedy. Prof. Bier (Berlin) warned his hearers against raising a limb in which gangrene is beginning, since this procedure will make it still more bloodless. He recommended the injection of animal blood.

The third official subject concerned the natural curative power of the body in surgical diseases and was introduced by Prof. Heile (Wiesbaden). He mentioned injection and transfusion of blood, diet prescriptions, and artificial production of fever by injection of albumin. Prof. Kubanyi (Budapest) dealt especially with the transfusion of blood and said that it was essential to preserve the natural temperature of the blood by special apparatus. Prof. Böhler (Vienna) spoke on fractures of the vertebræ and described his method of raising the compressed vertebra under local anæsthesia. A film demonstrated that his patients were able to perform gymnastic exercises shortly after injury.

A NEW HORMONE.

At the meeting of the Berlin Medical Society on March 16th Prof. Hermann Zondek reported on experiments performed by him and his assistant, Dr. Bier, on patients suffering from manic-depressive insanity. They found that the blood of those patients contained less than the usual quantity of bromine, but became normal between the attacks. They claimed to have discovered in the pituitary gland a new hormone containing bromide, and to have succeeded in isolating it in a soluble form. The new

[1] See THE LANCET, 1931, ii., 80.

hormone injected into dogs produced a decrease of motor power, fatigue, and apathy. During sleep the hormone is said to be discharged from the pituitary gland into the fluid of the medulla oblongata which is then found to contain an increased quantity of bromine. When the patient wakes this discharge ceases, and the hormone is stored in the pituitary.

THE AFTER-EFFECTS OF TONSILLECTOMY.

Dr. Wirth and Dr. Lachenit, of the Heidelberg University Clinic, describe in the *Münchener medizinische Wochenschrift* the result of an investigation of the health of patients after tonsillectomy. The criticism has been made that the patient is more liable to contract infections, and to develop chronic pharyngitis and hoarseness; 200 patients were approached, of whom 92 consented to be examined and six answered questions by letter. All the patients declared themselves to be satisfied with their state of health; some complained of coryza, but these were mostly found to be suffering from some pathological condition of the nose, such as deviation of the nasal septum. In some cases scarring of the palatine arch has caused difficulty in speaking, but all the patients stated that they did not regret having undergone the operation.

ORESTHIN.

Dr. Schmidt writing to the *Centralblatt für Gynäkologie* Nr. 3/1932 reports on his experiences with oresthin, an ecbolic compound of which 1 g. is equal to 1 g. of thymophysin. He has used it in 200 births and in 80 cases of induced abortion. Four injections are made of 0·5 to 1·5 g. at first and 1·0 g. when the head has entered the pelvis. In no instance has an infant died during birth. The duration of the labour is said to be considerably shortened by the drug, which is also indicated when separation of the placenta is retarded. Oresthin does not increase the blood pressure, a fact important in eclampsia.

PANEL AND CONTRACT PRACTICE

TEMPORARY RESIDENTS.

PROVISION is made under the National Health Insurance Acts for medical attendance on patients who may be from home when they require treatment. If away for less than twenty-four hours and the need is urgent the case can be treated locally under the distribution scheme as an emergency, the doctor being paid according to the emergency scale of fees adopted by the insurance committee of the area. An insured person who is away from home for a period of under three months can demand treatment from any local insurance practitioner by presenting to him the medical card after filling it up in space D. The doctor who accepts this card, signs it, and forwards it at once to the clerk of his local insurance committee, who returns it to the patient at his temporary address, at the same time sending the doctor who has signed it an envelope, with the name and address of the patient, his serial number, the society to which he belongs, and other particulars on it. When treatment is finished the doctor puts in it a continuation record card giving particulars of the illness, visits, consultations, and treatment. This special envelope is forwarded by the local committee to the home committee and so reaches the patient's home doctor. In this way the local committee have a record of the number of "temporary residents" attended in the quarter. Each doctor is paid for his attendance according to the local distribution scheme for this particular committee, the scale varying in different areas, but most committees allow six units for each temporary-resident patient as against one unit for the ordinary insured person. In the scheme of this arrangement, extra units were allowed for these cases because it was thought they would only receive attention when in need of it through illness, whereas the home doctor is paid his unit whether the patient is ill or not. Some committees allow eight units, others only four, for these temporary-resident cases.

CONVALESCENT HOMES.

But the matter is not quite so simple as this. Many insured persons obtain restoration to health through the assistance of convalescent homes maintained by approved societies at several well-known seaside resorts. After protracted illness the home doctor may advise a change to the seaside, and the society on application will send the patient to one of their convalescent homes, when it is usual for the home doctor to give a special intermediate convalescent certificate, if incapacity has lasted 28 days. Such a certificate covers 14 days and it can be given on any weekday between one Sunday and the next. This arrangement really covers three weeks. Thus if the special certificate has been given (say) on Monday, April 4th, no further certificate is needed until the week beginning Monday, 18th, and the patient could return home on Saturday, 25th, and obtain the necessary certificate from his home doctor on that day without infringing any regulations. He would then have been away from home 21 days, without needing the services of any insurance doctor in the area in which he was temporarily residing. Practice is, however, often different from theory. A small convalescent home will be in charge of a matron, a large home will have a medical officer who may be honorary or may be paid by the approved society. In either case it has become the nearly universal practice to collect the medical cards of these insured persons on arrival at the home. These cards are then signed in part D by the doctor to the home, who thus is credited with the appropriate number of units for each temporary resident in the home. This happens whether the convalescent requires treatment or not. Special consideration has been given in most local distribution schemes to this matter and the usual allowance is one-quarter that of the ordinary allowance—i.e., 1, 1½, or 2 units according as the usual rate of 4, 6, or 8 units for a temporary resident.

ADJUSTMENT OF THE CENTRAL POOL.

The insurance committee derives approximately 9*s.* a year (less 10 per cent. at the present time—a point which seems to have escaped public attention when every other cut has been noticed) for each insured person living in its area—i.e., on its register—but this does not include payment to doctors for their treatment of persons who have come to stay temporarily in its area. The money for the payment comes out of the central practitioners' pool and has to be added to the committee funds for this purpose to cover the extra units. The amount is arrived at by the Ministry of Health according to the returns furnished by each committee of the number of insured persons for whom temporary-resident treat-

ment has been provided, and from which insurance committee's area they have come. Every insurance committee will send some of its insured persons into other areas and will itself receive insured persons from other areas. Before the central pool is divided up, a temporary-resident adjustment is made, some committees by way of addition, others of deduction. The former are chiefly the seaside and health resorts; the latter the big commercial areas. In 1930 the distribution committee decided to advise the Ministry that all ordinary temprorary-resident cases should be credited at a case value of 8*s*., those in a convalescent home at 2*s*.; previously the amount paid by a home committee to the committee of temporary residence for the treatment of its cases varied from 20*s*. to 3*s*. 6*d*. The amount paid was that committee's "case value" as shown by the work done for temporary residents in its own area. This was found by adding up (at 2*s*. 6*d*. per item) all items on all the temporary-resident cards sent in and dividing by the number of cards. London was found to have a case value of about 12*s*., and as London sends away many more temporary residents than it receives, this meant that the London insurance committee had deducted from its share of the central pool a large number of 12*s*. The average of case values for all committees was found to be about 8*s*. Hence the advice tendered to the Ministry.

ADDITIONS AND DEDUCTIONS.

The figures given by the Ministry to the distribution committee are in percentages of the total number of insured persons. The comparison of these figures becomes easier if for each addition or subtraction the figure for 10,000 persons in each committee is given. Thus London has as apportionment of index register 12·9748 per cent. and a temporary-resident deduction of 0·714 per cent. The deduction therefore for 10,000 would be 55. The comparative figures worked out on this basis for 1930 and for 1931 are as follows for a few committees:—

DEDUCTIONS.	1930.	1931.
London	54	55
Birmingham	33	31
Newcastle	18	41
Manchester	33	36
East Ham	21	22
Hull	10	18
Liverpool	19	19
Cardiff	34	34
Swansea	18	28

The average deduction for England is 20·8, for Wales is 5.

ADDITIONS.	1930.	1931.
Southport	440	447
Blackpool	593	501
Hastings	384	348
Sussex, West	158	147
Yarmouth	373	419
Lincoln (Lindsay)	138	158
Cornwall	89	94
Isle of Wight	178	176

The average addition for England is 18·4, for Wales is 60.

One committee (Bucks) has changed from an addition of 1·5 last year to a deduction of 18 this year; Walsall had a deduction last year and is +0 this year. The committees which have additional credits this year as against deductions last year are: Leicestershire, Bath, Canterbury, Carlisle, Exeter, Gloucester, Plymouth, and St. Helens.

OMISSION TO DISCLOSE.

A not uncommon source of irregularity in panel practice is the patient's omission to disclose at the outset that he is an insured person. A case of this kind in South-West London resulted recently in an adverse decision by the Minister of Health against the practitioner. The patient had left the district of his former panel doctor and was now in a house in London. The respondent practitioner was professionally visiting that house in order to attend the patient's wife and another person. On Jan. 5th, 1931, the practitioner was asked to attend the patient himself who omitted to say that he was an insured person. Two days later the wife, calling at the practitioner's surgery for some medicine for herself, handed in her husband's medical card to a nurse employed in the surgery. Next day, calling again at the surgery, the wife was given by the nurse a national insurance certificate on Form Med. 40 (revised) signed by the practitioner under date of Jan. 5th, certifying that the husband was incapable of work. The husband was suffering from rectal abscess and was dressed daily at his home by a dresser employed by the practitioner. After a fortnight's confinement to his house, the husband continued to attend at the surgery to be dressed, the practitioner supplying the dressings. Certificates on Form Med. 40 (revised) continued to be signed. At the end of January or beginning of February a clerk employed by the respondent practitioner stamped the patient's medical card with the respondent's signature and forwarded it to the insurance committee. On or about Feb. 10th the respondent received the patient's medical record card from the committee. The respondent's clerk sent the patient an account for fees amounting to £6 13*s*. 6*d*. in respect of attention between Jan. 5th and Feb. 9th (both dates inclusive). The patient communicated with the insurance committee and paid the account. Later, after the committee had communicated with the respondent, the amount was refunded to the patient. In August the committee made its formal representation to the Minister against the continuance of the respondent on the Medical List, on the ground that he had improperly demanded and accepted fees for treatment which he was bound to give under the terms of service and that he had failed to comply with the terms of service. The inquiry committee found the facts proved as set forth above. Bearing in mind the receipt of the patient's medical card and the issue of the certificates as from Jan. 5th, they find that the respondent accepted the patient for inclusion in his list as from that date. It follows, by virtue of Article 10 (1) of Part I. of the First Schedule to the Medical Benefit Regulations, that the respondent was not allowed to make a charge and that the rendering of the account and the acceptance of payment were a breach of the terms of service. The inquiry committee contented itself with recommending that an order be made against the respondent for costs. The Minister thereupon ordered him to pay £5 towards the insurance committee's costs but took no step to remove his name from the Medical List.

The practitioner appealed against the insurance committee's decision to censure him and to ask the Minister to withhold £50. The tribunal found the facts established as before and recommended dismissal of the appeal. The appellant said his dresser told him that the patient desired to be treated as a private patient. The tribunal observes that Article 10 (1) would prohibit compliance with such a request. The appellant said he discussed with his clerk whether he was entitled to charge the patient, and that the clerk said the patient was not on his list till Feb. 10th when the medical card was returned by the insurance committee. The tribunal say that such a view is unfounded and that the practitioner cannot shelter himself behind his clerk's ignorance. The result is that the Minister dismisses the appeal, formally censures the practitioner, and directs £50 to be

withheld; he also directs that the appellant pay £5 towards the costs of the appeal.

One point in the proceedings is unusual. Under Article 33 of the Regulations the Medical Service Subcommittee may in its report draw attention to any previous reports made in connexion with the practitioner's history. The subcommittee included in its report a mention of three criminal charges against the practitioner of having performed illegal operations. In each of the three cases he had been acquitted after trial, and he naturally protested that the subcommittee had included matters in respect of which it had itself made no inquiry or report and matters relating to charges on which he had been acquitted. The inquiry committee seems to have upheld this protest and to have declared that the complainants were not justified in referring to these matters in their representation. "The fact that such charges had been made against him was clearly calculated to prejudice the consideration of his case, and, inasmuch as he had been held by a competent tribunal to be innocent of them, the fact that they had been made was clearly irrelevant." This is a very proper comment. It seems a pity, indeed, that the Minister was unable to award costs against complainants who were guilty of such manifest unfairness.

PUBLIC HEALTH SERVICES

MENTAL HOSPITAL REPORTS.

IT is impossible to review the 119th annual report of the ROYAL EDINBURGH HOSPITAL, MORNINGSIDE, without reference to the tragic loss to that hospital and to psychiatry caused by the death of Dr. G. M. Robertson only a few weeks after he read the address here printed. As usual, his report is far more concerned with the general situation of the mentally sick and the possibilities of prevention than with any dry official statistics. During 1931 the admissions to the four houses numbered 538, and 326 out-patients attended the Jordanburn Hospital and the University Psychological Clinic for Children. Of this total of 864 less than 12 per cent. were certified, and the whole of the work was done without cost to the ratepayers. The new children's clinic has received 121 patients since its opening in February, 1931, and has treated about half that number. The playroom has proved invaluable for observation and treatment. The cases seen at the out-patient clinic at the Royal Infirmary were classified as follows: psychoneuroses and neuroses, 36 per cent.; psychoses, 34 per cent.; bodily diseases with mental symptoms (organic nervous disease, toxæmia, endocrine disorders, other systemic diseases), 15·5 per cent.; behaviour problems in juveniles, 6 per cent.; deficiency, 4·5 per cent.; addictions (drugs, alcohol), 4 per cent. At Craig House and the West House there were 823 patients at the end of the year, 170 voluntary and 653 certified, and 137 patients were admitted to the eight nursing homes which have been opened in the suburbs and country round Edinburgh. These patients came from all over the English-speaking world; some came from England and Ireland to escape certification and one came from America to be placed in "the best institution in Europe." Over 150 students attended the course of instruction last year; the value to the future doctor of this very extensive and representative psychotherapeutic material is very great. In concluding his report, Dr. Robertson reviews the intervention of the sheriff and urges his replacement by some responsible body such as the Board of Control or the Department of Health.

The ABERDEEN ROYAL MENTAL HOSPITAL had 860 patients on its register on the last day of last year. Of the private admissions, 39·6 per cent. were voluntary and four rate-aided voluntary patients were also admitted. The recovery-rate for the year was 40 per cent. among the voluntary patients and 24·09 per cent. among all the patients together. The death-rate was 8·9 per cent. The dental surgeon continued his visits throughout the year and saw a large number of patients. The work in the occupational therapy department continues to give gratifying results, and many patients have benefited from the diathermy, high frequency and ultra-violet ray installation. During the year a tea-room and shop for patients and their friends was opened and is giving great satisfaction. The hospital is becoming overcrowded as the numbers steadily increase, but the directors have in view a plan of expansion. During 1931 a nursing-home for 20 patients was opened. It is pleasantly situated on Dee-side and is intended for persons threatened with or suffering from early nervous or mental disorders, such as anxieties, exhaustion, or depression.

The CITY OF LONDON MENTAL HOSPITAL, STONE, DARTFORD, had 658 patients on Dec. 31st last; the accommodation proved sufficient for statutory requirements but a number of private applications had to be refused. Of the 146 patients admitted during the year, 86 were either voluntary or temporary. The recovery-rate was 58 per cent. and the death-rate 6 per cent. The general health was good except for an epidemic of influenza and there was no dysentery or typhoid. Every ward now has a loud-speaker, and headphones are provided for patients in bed. An out-patient clinic has been established. Parole is granted on a liberal scale; 125 patients are allowed outside the estate and 213 are free within the grounds. During the year one nurse and two attendants obtained their R.M.P.A. certificates.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 23RD, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 96 (last week 87); scarlet fever, 1632; diphtheria, 772; enteric fever, 18; acute pneumonia (primary or influenzal), 994; puerperal fever, 41; puerperal pyrexia, 113; cerebro-spinal fever, 66; acute poliomyelitis, 6; encephalitis lethargica, 10; continued fever, 1; dysentery, 18; ophthalmia neonatorum, 101. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 26th–27th was as follows:—Small-pox, 128 under treatment, 3 under observation (last week 122 and 1 respectively); scarlet fever, 1487; diphtheria, 1327; enteric fever, 9; measles, 2655; whooping-cough, 424; puerperal fever, 16 (plus 7 babies); encephalitis lethargica, 225; poliomyelitis, 5; "other diseases," 96. At St. Margaret's Hospital there were 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 109 (48) from measles, 9 (1) from scarlet fever, 40 (5) from whooping-cough, 24 (6) from diphtheria, 33 (10) from diarrhœa and enteritis under two years, and 78 (11) from influenza. The figures in parentheses are those for London itself.

The fatal cases of typhoid and paratyphoid fevers outside London occurred at Oldham and Birmingham. Liverpool reported 12 deaths from measles, West Ham 7, Sheffield 6, Leeds and Derby each 4. Manchester and Birmingham each reported 4 deaths from whooping-cough. Diphtheria accounted for 6 deaths at Liverpool.

The number of stillbirths notified during the week was 319 (corresponding to a rate of 44 per 1000 births), including 71 in London.

CORRESPONDENCE

NOMENCLATURE OF DISEASES.

To the Editor of THE LANCET.

SIR,—It is open to doubt whether certain opinions expressed in your annotation on the sixth edition of "The Nomenclature of Diseases" will be endorsed by medical zoologists, and it seems well that, at the earliest opportunity, attention should be directed to the fact that in the section headed "Animal Parasites" (Appendix C) various errata have been allowed entry or have remained uncorrected from the fifth edition.

The most unfortunate of these, perhaps, is the rendering *Wauchereria* for *Wuchereria*. That this is not a mere incidental printer's error is evidenced by the fact that the misspelling is repeated throughout. Several other misprints of a similar character occur, but need not be specified. There are, however, certain dispositions to which zoological nomenclaturists may be expected to take exception. The names *Ascaris*, *Dracunculus*, *Dioctophyme*, and *Trichuris*, for instance, have been pilloried by Prof. Leiper, while *Hepaticola* has been held by Dr. Baylis to be synonymous with *Capillaria*. Attention may also be drawn to the heading "Phylum—Vermes." This is an incorrect juxtaposition which does not find a place in the previous edition, and has apparently been introduced as an emendation. There is, of course, no zoological phylum bearing the designation "Vermes," this being merely a term conveniently applied to a conglomeration of at least four separate and distinct zoological phyla. Such discrepancies cannot fail to be an additional source of concern to those in the unenviable position of having to reconcile common medical usage with the rules of zoological nomenclature, especially as the unwary may, not unnaturally, infer that the nomenclatural doubts and difficulties which have assailed medical zoologists for at least the past three decades have been happily resolved in this official publication. Such, unfortunately, is far from being the case.

As you, Sir, have seen fit to approve and advocate the retention of this appendix in "The Nomenclature of Diseases" you may, equally, be in a position to recommend that in future editions it may be found possible to correlate the decisions of the subcommittee with current zoological opinion and practice, though, under present circumstances at least, that may appear a matter of almost insuperable difficulty. On the other hand it should be borne in mind that such conventions as may affect the nomenclature of the causal agents of disease do not necessarily, if at all, apply to the nomenclature of the resultant diseases, and that changes in the former need not inevitably be followed by changes in the latter. In this matter the committee may be congratulated on a wise conservatism in retaining such names as "filariasis" even though no species of the zoological genus *Filaria*, in its present restricted acceptance, is known to cause disease in man.

I am, Sir, yours faithfully,

London, April 30th, 1932. WILLIAM NICOLL.

THE LATE SIR WATSON CHEYNE.

To the Editor of THE LANCET.

SIR,—In your issue of April 30th Sir Harold Stiles, in writing an appreciation of Sir Watson Cheyne, refers to him as "the last of the diehards to abandon antiseptics for a strictly aseptic technique," and later on Sir Harold Stiles writes that he thinks that ultimately Sir Watson became a convert.

Sir Watson was never a diehard. It is true that he was not carried away by every breath of theory, but he did most sincerely endeavour to incorporate in his work anything that was of value in newly introduced methods, and his adherence to the older methods of technique was not due to obstinacy, but to a definite, considered judgment that it was better. It is true that he used autoclaved dressings so as to obviate the weight of the older wet dressings, but these always contained a chemical antiseptic, and in other ways his technique altered very little. Nor was he the last of that school of thought, if such an obscure person as myself may claim to be considered. He and I often discussed this question, and he always deplored the teaching that chemical antiseptics do such an infinity of harm. He quite realised the excellent results that experts, working under good conditions, could obtain by the more modern technique; but he felt that, in less skilled hands, under less perfect conditions, the results would not be so satisfactory. When I was a registrar we worked out his statistics as to sepsis over a long term of years, and we found that it was only 0·7 per cent. of the cases which showed any sign of suppuration. Most of this sepsis seemed to have arisen after the patient had been returned to the ward. We expected that about every alternate house surgeon would have a septic case—i.e., about one case a year. Controversy dies sometimes from mere weariness, not because the protagonists of a theory have proved their point. Perhaps some day "local chemotherapy" will be reinvented.

I am, Sir, yours faithfully,

ARTHUR EDMUNDS.

Queen Anne-street, W., May 1st, 1932.

CŒLIAC DISEASE AND DWARFISM.

To the Editor of THE LANCET.

SIR,—In their paper on the Treatment of Megalocytic Hyperchromic Anæmia (THE LANCET, April 16th, p. 829), Dr. Janet Vaughan and Dr. Donald Hunter refer to a case of dwarfism in a girl of 16, particulars of which were originally published in an article on Megalocytic and Non-megalocytic Anæmia, by Dr. A. C. Hampson and myself (*Guy's Hospital Reports*, 1924, lxxiv., 193). I note that they think that the dwarfism was probably due to cœliac disease, and state that it was thought at the time to be a case of renal dwarfism. May I point out that the dwarfism had only been considered renal previous to our investigation? Unfortunately, we did not carry out the urinary or fæcal examination ourselves, but, in the absence of blood or appreciable albumin in the urine, we did not think that any weight should be attached to the report of "a few blood-casts" in the urine when apparently no other casts had been found. Against the classification of this case as one of cœliac disease must be considered the facts that at no time had she had any symptoms of the condition (which would have needed to be fairly severe to produce the degree of dwarfism that existed), and that the finding of "a slight excess of fatty acid crystals in the stools" was a purely microscopical finding, the stools being apparently not abnormal. In our opinion, the case was one of Addison's anæmia occurring in a child—a condition which was probably quite sufficient to account for the dwarfism, in common with almost

any severe chronic disease occurring at this period of growth. I may mention that this child was admitted to hospital solely for operative correction of her severe genu valgum.—I am, Sir, yours faithfully,

J. W. SHACKLE.

Grosvenor-street, W., April 30th, 1932.

SPEECH AND INTELLIGENCE.

To the Editor of THE LANCET.

SIR,—I have been greatly interested in Dr. Morison's paper on Speech and Intelligence in your last issue. I note that lalling and baby-talk are regarded by him as synonymous. In an inquiry last year regarding the prevalence of speech defects in the elementary school-child in Coventry, lalling and baby-talk were differentiated. Lalling was regarded as an inability to produce the anterior-linguopalatal sounds l, t, d, and n, and baby-talk as the substitution of one consonant for another. Which is the correct usage? Lalling in this narrow sense was found to be an extremely uncommon defect and had no correlation with educational retardation. On the other hand 30 per cent. of the baby-talkers were said to be educationally retarded.

I am, Sir, yours faithfully,

May 2nd, 1932. M. J. MOIR.

REFERRED PAIN IN VISCERAL DISEASE.

To the Editor of THE LANCET.

SIR,—In your issue of April 30th Mr. David Ligat points out with justice that Mackenzie extended his original conception of the viscero-sensory reflex to embrace pain and hyperalgesia of all the layers of the abdominal wall supplied by sensory somatic nerves. But Mackenzie only used the term "viscero-sensory reflex," so far as the gastro-intestinal tract is concerned, to account for pain and hyperalgesia in the abdominal wall resulting from disease of the viscera. Mr. Ligat, on the other hand, applies the term "viscero-sensory reflex" to the reflex inhibition of intestinal movement which results from trauma applied to the sensory somatic nerves of the abdominal wall, and I must again insist that this reflex has nothing in common with the mechanism conceived by Mackenzie as the viscero-sensory reflex.

That stimulation of the somatic sensory nerves of the abdominal wall does cause reflex inhibition of intestinal movement through the agency of the splanchnic efferent nerves is no mere theory, but a fact as well established as anything in experimental physiology. But it cannot be argued from this that stimulation of the visceral afferent nerves in disease must cause a radiation of pain to the somatic nerves of the abdominal wall such as Mackenzie postulated.

I must confess to some scepticism as to "the phenomenon of visible peristalsis elicited by pinching up the skin and subcutaneous tissue of the abdominal wall in certain cases of intestinal obstruction." The visible peristalsis can be elicited so much more readily in these cases by intermittent deep palpation, or better still by getting the patient to take a warm drink. But let us assume for the sake of argument that my doubts are groundless, and that this reflex is as well established as Mr. Ligat would appear to believe. It is still nothing more than a motor reflex exciting intestinal movement, presumably through the agency of the parasympathetic nerve, and has no analogy with Mackenzie's viscero-sensory reflex theory. I am, Sir, yours faithfully,

Manchester, May 2nd, 1932. JOHN MORLEY.

PSYCHOLOGY AND MEDICINE.

To the Editor of THE LANCET.

SIR,—Dr. Crookshank's letter in your last issue is confirmatory evidence, if such evidence were needed, of the truth of my contention that the fundamental science is psychology, without prefix or suffix, and that the contributions of Freud and of Adler are to be seen in their true proportions only in relation to this general science. Judged in this way, Freud's contribution, both of fact and of explanatory theory, towers high above the other. But when one turns from psychology to philosophical first principles one finds that such facts and subsidiary hypotheses can be interpreted philosophically in more ways than one. Methodologically, the two points of view—the psychological and the philosophical—should be kept distinct, although, of course they are intimately related to one another.

The distinctive characteristics of Adler's views which Dr. Crookshank quotes are mainly of a philosophical nature and by no means peculiar to Adler. The purposive nature of mental activity, the fundamental unity of the individual, the freedom of the will—all these are parts of the teaching of many psychologists, myself included, independently of anything that Adler ever said or wrote. Such positions can be harmonised with much of Freud's teaching, even if Freud himself and some of his followers may not accept them.

In reading the works of some "individual psychologists," one gets the disquieting impression that they are "mixing their categories," and using a vague philosophical terminology to eke out a psychology which is weak in empirical detail. As I said in my previous letter controversial points of a truly psychological (as distinct from a philosophical) nature can only be settled on the basis of prolonged and deep analysis of cases, and those who carry out such analyses are likely to find no further need to march under the banner of one man, or of one movement.

I am, Sir, yours faithfully,

Harley-street, W., May 2nd, 1932. WILLIAM BROWN.

ADVERTISING AND CANVASSING.

To the Editor of THE LANCET.

SIR,—The attention of the General Medical Council has been called to a proposal to provide free medical attendance for purchasers of a commodity which is to be sold through the agency of advertisement and canvassers. I am directed to point out that any registered medical practitioner who associated himself with such a scheme might be held to have contravened the Council's Warning Notice in regard to advertising and canvassing, and to have rendered himself liable to be summoned to appear before the Council in answer to a charge which, if proved, might have serious consequences. The warning referred to is as follows:—

Advertising and canvassing.—"The practices by a registered medical practitioner—

"(*a*) of advertising, whether directly or indirectly, for the purpose of obtaining patients or promoting his own professional advantage; or, for any such purpose, of procuring or sanctioning or acquiescing in the publication of notices commending or directing attention to the practitioner's professional skill, knowledge, services, or qualifications, or depreciating those of others; or of being associated with or employed by those who procure or sanction such advertising or publication; and

"(*b*) of canvassing or employing any agent or canvasser for the purpose of obtaining patients; or of sanctioning,

or of being associated with or employed by those who sanction, such employment;
are in the opinion of the Council contrary to the public interest, and discreditable to the profession of medicine, and any registered medical practitioner who resorts to any such practice renders himself liable on proof of the facts to have his name erased from the Medical Register."

I am, Sir, yours faithfully,

NORMAN C. KING,
April 27th, 1932. Registrar, General Medical Council.

"VETERANS."

To the Editor of THE LANCET.

SIR,—With reference to the annotation under this heading in your issue of April 30th (p. 947), the following practitioners whose names appear in the Medical Register, 1932, have also been registered for 65 years or longer: Dr. Edmund Holland, of Hendon, registered on May 15th, 1863; Dr. Shephard Thomas Taylor, of Edgefield, Norfolk, on Oct. 21st, 1865; and Dr. C. G. H. Bäumler, now of Freiburg, on July 25th, 1867. Dr. Edmund Holland is the senior Fellow of the Royal College of Surgeons, and also the senior Member of the Royal College of Physicians. Dr. Michael Grabham, of Madeira, the present senior Fellow of the Royal College of Physicians, qualified in 1861, although he did not register until 1883.

I am, Sir, yours faithfully,

W. J. BISHOP,
Assistant Librarian, Royal College
April, 29th, 1932. of Physicians of London.

SCARLET FEVER AND STREPTOCOCCAL INFECTION.

To the Editor of THE LANCET.

SIR,—I was much interested in Dr. Whitfield's letter in your last issue (p. 955) as I quite agree that we ought to hesitate before accepting a streptococcus as the cause of scarlet fever. There is another point I would like to raise—namely, that of the value of scarlet fever streptococcal serum in the treatment of this disease. Are the results of treatment by scarlet fever serum in any way comparable with those obtained from the use of diphtheritic serum in the treatment of diphtheria? I have been unable to satisfy myself that the incidence of complications was lessened to any great extent in serum-treated cases, as opposed to non-serum-treated ones; moreover, the period of detention in hospital for such cases was no shorter than for those which had not been given serum.

I am, Sir, yours faithfully,

J. TODESCO.
Croydon Borough Hospital, May 3rd, 1932.

TOXIC EFFECTS OF PHENOLPHTHALEIN.

To the Editor of THE LANCET.

SIR,—Dr. Elizabeth Hunt's letter, informative and interesting as it is, would be of increased value if the dosage of phenolphthalein were indicated in the cases she describes. Wise and Abrahamovitch, writing in 1922, describe several cases in the U.S.A. showing "a peculiar polychrome eruption of the skin with bullous, vesicular eroded lesions of the genitals, and mucosæ." They stated that pigmented areas may persist for years and are liable to activity again on resumption of the drug, to which, it seems, according to every account, there is no establishment of tolerance. In 1923 further cases were observed and one in particular manifested nasal herpes. In general the dermatitis produced is stated to have closely resembled that caused by phenazone in susceptible people, and these seem to be usually persons with a seborrhœic skin (Wise and Parkhouse).

I have found no mention of pruritus with phenolphthalein exanthemata by other observers save Dr. Hunt, but I have known personally of two young neurotic female patients in whom the giving thrice daily of 7½ and 10 grains respectively of phenazone has produced a marked itchiness of the skin, but with no accompanying erythema.

I am, Sir, yours faithfully,

Queen Anne-street, W., May 3rd, 1932. G. AUBREY.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. I. S. Gabe is placed on the retd. list at his own request.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. J. A. Kerr to be Surg. Lt.-Comdr.
Proby. Surg. Sub-Lts. H. R. Vickers and B. R. Alderson to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Lt. G. R. M. Apsey relinquishes his temp. commn.
Lt. C. P. Allen (temp. commn.) to be Capt.

ARMY RESERVE OF OFFICERS.

Lt. J. Neil Leitch, from Reg. Army Res. of Off., to be Lt.

TERRITORIAL ARMY.

Lt.-Col. E. M. Cowell, from R.A.M.C., to be Col.
Lt.-Col. A. Ramsbottom, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

Capts. R. N. Bhandari and A. J. C. Culhane to be Majs.
The prob. appts. of the undermentioned officers are confirmed:—To be Capt.: R. M. L. Still. To be Lts.: B. Temple-Raston (now Capt., prov.), Mazhar Hussain Shah, G. K. Graham, A. W. West, J. O'Neill, H. B. Macevoy, M. K. Bryce, M. M. Mansfield, J. Guthrie, J. L. O'Neill, and W. J. Stewart.
The undermentioned appts. are made:—To be Lts. (on prob.): G. R. M. Apsey and Hannes Hannesson.

A BIRMINGHAM HOSPITAL SHRINE.—A brick room at Dudley-road Hospital, Birmingham, has been transformed, at the cost of the staff and friends, into a shrine or chapel for the reception of patients who die in the hospital.

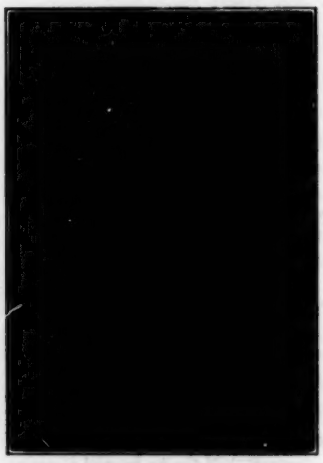
A DONCASTER INFIRMARY SWEEPSTAKE.—The Doncaster Infirmary Supporters (St. Leger) Association has been formed with the object of raising £50,000 by means of a sweepstake on the race for the St. Leger. The mayor of Doncaster was the first member to be enrolled, and the chairman of the committee is the honorary solicitor to the hospital. The annual subscription is 5s.; an office has been taken, and Miss A. E. Hanchett, the infirmary's appeals secretary, has been given six months' leave of absence to enable her to take the post of secretary of the Association. The hon. treasurer is the manager of a local bank. The proportions of the subscribed money to be allocated to the infirmary and to the members on the result of the race have not yet been determined. Membership forms are being sent to every house in the district served by the hospital and applications for membership have already been received from many parts of the country. The objects of the association appear to be wider than the organisation of a sweepstake, the rules giving powers "to take such steps by personal or written appeals, public meetings or otherwise as may from time to time be deemed expedient for the purpose of procuring contributions to the funds of the association, in the shape of donations, annual subscriptions, or otherwise" and "to subscribe to any local or other charities and to grant donations for any public purpose."

OBITUARY

SIR DAVID DRUMMOND, C.B.E., M.D. Dub., D.C.L., LL.D.

BY the death of Sir David Drummond, in his eightieth year, Newcastle and the north of England has lost one of its most distinguished physicians.

David Drummond, the third son of David Drummond, of Dunfillan, Rathgar, near Dublin, was born there in 1852. After completing his school-days at Broadstairs and Rathmines, he received his early medical education at Trinity College, Dublin, and at the Meath Hospital, where he was a pupil of the great Stokes. He graduated M.B., M.Ch., at Trinity College in 1874, and, to extend his experience, proceeded to the medical schools at Vienna, Prague, and Strasbourg. In 1876 he took the higher degrees of M.A. and M.D. Dublin, and in the same year came to Newcastle and was appointed assistant physician to the Children's Hospital, where he succeeded a year later to the post of full physician. At the same time he was appointed physician to the Newcastle Dispensary, but resigned the latter post on being appointed honorary physician to the Royal Infirmary two years later.



SIR DAVID DRUMMOND.

[*Photograph by Lafayette.*

Drummond's association with the Royal Infirmary was indeed intimate, for he served on the staff for the long period of 34 years, from May, 1878, to December, 1912, while concurrently, from July, 1879, to November, 1895, he held the post of pathologist to the institution. During the whole of that time he was an enthusiastic teacher; ever interested himself, he succeeded in stimulating others, and in keeping abreast of that rapid development of medical knowledge which took place during the period. At the University of Durham College of Medicine he was equally a great and abiding figure. He passed from one lectureship to another. In 1876 he was appointed lecturer in therapeutics, in 1878 in physiology, and in 1883 in pathology, continuing to teach that subject until he was appointed lecturer in medicine in 1905. He succeeded to the position of professor of medicine in June, 1911, and continued in that office until July, 1924, being emeritus professor at his death. He was President of the College from 1918 to 1924, and Vice-Chancellor of the University of Durham from 1920 to 1922. The abundance of academic and administrative duties which he discharged led to a keen interest in promoting good fellowship between members of the profession and in his taking practical steps for the advancement of medical education. He served for several years as secretary of the Northumberland and Durham Medical Society, and as editor of its transactions, and for a period was secretary of the north of England branch of the British Medical Association, of which he was President in 1921.

Drummond's earliest scientific bent was towards neurology, as is indicated by his writings on "Diseases of the Brain and Spinal Cord," "Paralysis from Peripheral Neuritis," "Anæsthesia in Functional and Organic Disease of the Nervous System," and other contributions of a similar nature. In later years he widened his scope, and became especially interested in specific aortitis and thoracic aneurysm, in the investigation of which he had a great and varied experience. In his presidential address before the B.M.A. in 1921 he expounded fully the text of his life-long teaching by his plea for accuracy in clinical observation and its confirmation by the test of pathological findings, in order that clinical knowledge might be strengthened and that the statistics founded on death certification might correspond with fact. He was truly one of the great teachers of clinical medicine, and there are many men who will gladly acknowledge him as having been their master. As a consulting physician he enjoyed a deservedly extensive reputation, not only in the northern counties but throughout the country at large. A colleague writes of him thus: "His practical powers of observation enabled him to make rapid deductions, and to translate physical signs into terms of pathology, and he was at all times helpful alike to patient and practitioner. He was a most delightful colleague, always inspiring, never stale, and throughout his life a true and loyal friend. He was, moreover, a happy, genial companion, and enjoyed his leisure and his pastimes. In his younger days he was a keen cricketer, and had always been fond of country sport. Of wiry build and active temperament, even up to last autumn he could hold his own with much younger men on a long day's shooting."

Sir David Drummond was senior physician to the Northumberland War Hospital during the war, received the C.B.E. in 1920, and a knighthood in 1923. He retired from practice in 1926, in which year he was President of the Association of Physicians of Great Britain and Ireland, and was serving on the Royal Commission on Lunacy. He went to live at Beattock in Dumfriesshire, where his time was equally divided between country pursuits, which he loved, and the study of literature, where his views were far ranging and controversial. Throughout his long successful life Lady Drummond was ever by his side. She was the daughter of a Newcastle man, Mr. George Angus, and they had six sons and four daughters. They lost one son in the war, and another son, that promising surgeon Mr. Hamilton Drummond, who distinguished himself by service in the war, was killed in 1925 as the result of a motor accident. Lady Drummond and four sons survive him, one of whom is Dr. Horsley Drummond, a successor to his father as physician to the Newcastle Infirmary. The sympathy that goes out to Sir David's family will be accompanied by high appreciation of the usefulness of his life, of his fine professional example, and of his contributions to the promotion of medical knowledge and education.

Prof. G. Grey Turner writes: "The death of Sir David Drummond removes a notable physician, who had occupied a leading place in Newcastle and the North of England for the greater part of a long life. He will always be gratefully remembered by a very numerous succession

of men, now scattered all over the world, who came under his influence, either as students or house physicians or young practitioners, and each will remember him for his sound teaching, genial personality, kindly influence, and timely help in one way and another. Drummond was a great clinician and clinical teacher, who constantly urged the importance of actual contact with patients. He was certainly best at the bedside or in the post-mortem room, for when the opportunity offered he was ardent to carry the lines of clinical examination into the domain of naked-eye pathology.

"When I first came under his influence as a student he acted in the dual capacity of honorary physician and pathologist in the old Royal Infirmary, and his keenness in both spheres was infectious. It certainly taught me the paramount importance of correlating the clinical findings with post-mortem examinations, and this was always uppermost in his mind and those who remember his presidential address at the annual meeting of the British Medical Association in Newcastle in 1921 will recollect that this was his theme. He was keenly interested in surgery—not as an art but as a therapeutic measure—and in those far away days he was often readier than some of his surgical colleagues to invoke its aid in doubtful cases. His long and intimate collaboration with his friend and colleague, Rutherford Morison, was very fertile and led to many notable enterprises. Their names will always be associated with the operative treatment of ascites in cirrhosis of the liver which, by-the-by, was an operation practised in Newcastle with much success until the day arrived when that particular type of disease seemed largely to disappear. It was always delightful to see Drummond at an operation on one of his own cases; no one was more enthusiastic, no one more anxious to understand the pathology. Later in my career I was accustomed to meet Sir David in consultation, and each case was an education for me. Though I always took great pains to elucidate beforehand every point that I thought might have a bearing on the condition, he was sure to pick out something I had overlooked, to which he always drew my attention in the kindest possible way, and only to my advantage. I shall ever be extremely grateful for his encouragement and often in the time of darkest failure. How much that meant to a young surgeon!

"On one occasion he gave a delightful address to the Students' Medical Society entitled The Detective in Medicine, and that certainly was a rôle in which he excelled. His own interest never seemed to flag and I well remember, when he was nearly 70, how he urged me to 'keep up your interest in medicine,' and for him that word was always used in its widest sense. His example of youthful enthusiasm carried on into old age was in itself a perpetual stimulus, which none could witness without being infected.

"An enormous consulting practice, together with his hospital work, and his duties in connexion with the medical school, often involved him in overwork and many anxieties, but he always had the saving grace of humour, and this often came to his aid and cheered up those about him even in grim circumstances. He was never tired of relating stories of his early medical life in Dublin, and it was then that the delightful Irish brogue, at other times imperceptible, became so apparent. It was only a few days ago that he made me join him in laughter concerning the adventures of himself and his old friend Watson Cheyne in a sailing expedition down the Rhine, when they were students together in Strasbourg, and now alas both are gone!

"In dealing with patients he was habitually courteous and kindly, but on occasion he could be—to say the least of it—unmistakably emphatic, and by observing his methods of handling difficult situations, young practitioners gained a great insight into the conduct of their work. All through the war, and in the excessively busy years immediately afterwards, his energy and capacity for labour were a constant example. It was quite remarkable how he would go off in the early morning to make a country consultation, and would carry on far into the night, apparently without fatigue. As a matter of fact it was only his spirit which carried him along for, though wiry, he was not really robust, and his temperament was of the nervous type. In spite of this he had fine courage, as was shown by the way he braced himself to face the ordeal of a much dreaded operation."

EVAN HERRING HARE, F.R.C.S. Eng.

Dr. Hare, of Hornsey, who died on April 25th, was born at Putney in 1851, and was educated at Guildford, Westminster, and St. John's College, Oxford, where he graduated as B.A. in 1872 and later as M.A. From the University he proceeded to St. Thomas's Hospital, and qualified as M.R.C.S. in 1876. In the same year he saw active practice in the war between Serbia and Turkey, as one of the surgeons sent out by Sir E. Letchmere's committee, and he obtained a considerable reputation by bravely completing a surgical operation when an attack by Bashi-Bazouks was momentarily anticipated. This incident, in which Mr. Fleming Sandwith was his companion, was described in our columns at the time (1876, ii., 624) and won him the Gold Medal for Valour from King Milan of Serbia. He also went to South Africa, as civil surgeon attached to the Army, in the Zulu War of 1879, but was prevented from rendering assistance to the troops by a severe fever which kept him in Natal until, on convalescence, he was invalided home. After a few years' practice at Kew he moved to Hornsey in 1886, and there passed the rest of his life, in active practice until 1920. In 1887 he became F.R.C.S. Eng., and in 1891 he produced an English translation of Dr. Theodor Puschmann's voluminous work, "Die Geschichte des medicinischen Unterrichts" (History of Medical Education). Unfortunately, after only a few copies had been issued, the whole of the rest of the edition was destroyed by a fire at the publisher's warehouse.

Dr. Hare married in 1885 Emily Lucy, daughter of R. N. Cummins. Four of their six children survive him, but his eldest and youngest sons were killed in the late war.

SHEFFIELD ROYAL HOSPITAL.—The South Yorkshire miners' welfare committee has promised to give £20,000 and, if necessary, £25,000 for the provision of a new X ray and massage department at Sheffield Royal Hospital. It is officially stated that the present department is not safe for those continually working in it.

INSTITUTE OF HOSPITAL ALMONERS.—The annual report records that during the last two years the number of women applying for training has much increased. The present economic situation has, however, checked the normal development of the work, and during the last few months not so many new almoners' departments have been established. In a preface to the report Lord Moynihan, president of the institute, expresses the hope that hospital boards will not defer the establishment of an almoners' department on grounds of economy. "The prevention of waste," he adds, "is a part of the economy, and that, given a wide interpretation, is the business of the almoner."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

DUTIES ON MEDICAL AND SURGICAL INSTRUMENTS.

THE House of Commons, on Wednesday, April 27th, considered the Budget resolutions on Report.

Mr. LAWSON moved an amendment to exempt from the duties chargeable under the Import Duties Act, 1932, any consignment of medical, surgical, or scientific instruments. He gathered from the Board of Trade Navigation Account that the total amount of medical, surgical, and scientific instruments imported into this country from abroad last year amounted in value to £337,000. The medical profession in this country were dependent for those instruments to that amount upon foreign countries. Any imposition of taxation upon the instruments imported from abroad would certainly increase the expenditure and the difficulties of the hospitals and of all who carried on work of that nature. There was another point. They knew that in scientific matters, and particularly in the higher branches of science, the more delicate the instruments were the less likely they were to be affected by boundaries. He believed that instruments of this kind were supposed to be more affected by an international outlook because of the great human needs for which they were designed, and therefore it was probable that doctors who needed operating and other scientific instruments would be solely dependent upon instruments which came from abroad.

The SPEAKER said that it seemed to him that a great many of these medical and surgical and scientific instruments were already liable to duty, and if that was the case those that were liable to duty would be exempted from the provisions of the Import Duties Act.

Mr. HORE-BELISHA said that the argument which had been developed by Mr. Lawson was one which appealed to the sympathy of the House and of the Government. If he had in mind any particular class of instruments in favour of whose exemption a powerful case could be made, that case could be presented to the Advisory Committee, who, under the existing law, would have power to recommend its insertion in the Free List.

Mr. H. WILLIAMS said that Section 1 (5) of the Safeguarding of Industries Act read as follows:—

> "For the purpose of preventing disputes arising as to whether any goods are or are not any goods chargeable with duty under this part of this Act, the Board may from time to time issue lists defining the articles which are to be taken as falling under any of the general descriptions set out in the said Schedule . . ."

Accordingly, if a new scientific instrument was nvented, all that the Board of Trade had to do was to add it to the list.

The amendment was negatived.

Mr. TINKER moved an amendment providing that if an article could not be sold at a reasonable price when produced in this country a duty should not be placed upon it when it came from abroad.

Mr. HORE-BELISHA replied that the Advisory Committee would have regard to reasonable price and would act as a safeguard to the consumer, and the amendment was negatived by 264 votes to 48.

HEALTH ADMINISTRATION IN INDIA.

On Friday, April 29th, the House of Commons went into Committee of Supply on the Civil Estimates. Captain BOURNE, Deputy-Chairman of Committees, was in the chair.

On a vote of £81,110 for the cost of the Department of His Majesty's Secretary for State for India in Council,

Sir SAMUEL HOARE (Secretary of State for India) said that he had always thought that perhaps the two greatest gifts that the West could give to the East were improvements in communications and improvements in health. He could report certain definite improvements in the province of health. First, there was the advance that was being made in mastering the terrible scourge of leprosy. Leprosy surveys were being continued, and had already led to a great increase in the number of cases treated at small cost in clinics. These cases numbered over 24,000 in the Central Provinces and 28,272 in Madras, although a decade ago only about 8000 lepers were being cared for in the whole of India. A very interesting advance had also been made in the measures for dealing with another sourge of India—cholera. There was what was called a bacteriophage, which had been discovered. It was a very minute parasite growing in the cholera bacillus, and it could now be isolated for obtaining a pure culture. The varieties obtained had the power to destroy the bacilli of cholera very rapidly, and they were added to the water-supply where cholera had broken out or was likely to break out. That had been done in the last 12 months in the Nawgong district of Assam. In this cholera season, and the last two cholera seasons, practically no cholera occurred in the area dealt with. If this was confirmed by further observations, it would constitute the most important advance which had ever been attained in dealing with the most serious epidemic disease of India. A quite definite advance had also been made during the last 12 months with the malaria survey for coping with another of the great scourges of the East.

After further debate, progress was reported.

PRISON ADMINISTRATION.

On a Vote of £394,110 for the salaries and expenses of the Prison Commissioners and the Prisons in England and Wales,

JUVENILE DELINQUENTS.

Dr. SALTER urged that juvenile delinquents should be remanded to an observation centre where their real mental and physical condition could be ascertained instead of being sent to prison. The necessity, he said, was now urgent, particularly having regard to the increasing number of juvenile delinquents and to the very numerous cases, which were unfortunately increasing in proportion to the whole, where mental and moral and physical damage had been caused by *encephalitis lethargica*. He knew of two adolescents who were suffering from this disease and were sent to prison, whereas if they had been remanded to an observation centre their condition would undoubtedly have been discovered. One of them actually died in prison from the after-effects of the disease, and obviously it was cruelly wrong that they should ever have been sent to prison. The other had paralysis of the muscles of the eyeball and various other physical signs which would have led to instant detection and altogether different treatment had the measures recommended by the Departmental Committee been carried out. He could also give the Home Secretary particulars of the case of a young man who was suffering from juvenile general paralysis of the insane. He was in prison some months before it was discovered what was the nature of the complaint from which he was suffering, and he was removed to an asylum. We were behind a great many other countries in this respect. Belgium had admirable observation schools for the purpose, and a carefully graded system enabled the specialists who controlled the institutions to decide what particular after-treatment was required. All kinds of ingenious physical and psychological tests were employed, and as a result the whole attitude of the authorities towards juvenile offenders had been modified. At the London County Council last week there was a prolonged debate on this subject, and he understood that general dissatisfaction was expressed by speakers representing all parties at the condition of things. It was agreed on all sides that development in the

direction he had indicated should be carried out. It was held, however, that it was not a matter for the County Council, but for the Home Secretary to decide the precise form under which the administration should be conducted. He hoped that Sir H. Samuel would give his personal attention to the matter.

PRISON DIETARY.

Referring to the question of prison dietary, Dr. Salter said that he supposed that the most important medical discovery of this generation had been that of vitamins. It was a discovery of equal importance to the discovery of antiseptics by Lister. It was known now how our mental faculties, our physical health, and our moral outlook could be modified, not merely by internal gland secretions, but by these vitamin substances that were taken in food. The supply of green stuff, green vegetables, particularly uncooked green vegetables, in prison was extraordinarily small and deficient. He spoke with some experience of this matter because he had been in prison on more than one occasion. It might be said that these were luxuries to which no prisoner was entitled. He submitted, however, that in view of modern knowledge as to the detrimental results of the deprivation of these vitamins they ought to be supplied to every prisoner. He asked the Home Secretary to consult his medical advisers on this matter in the hope that prison dietary would be augmented or modified in this direction.

TEST BY PSYCHOLOGISTS.

Mr. LOVAT-FRASER said that it was now the opinion that children who got into trouble ought to be carefully examined; that their characters ought to be tested by psychologists. Their past life and their environments should be investigated, and that only then should the magistrates deal with them. The same thing was necessary with adult prisoners. At present we treated abnormal people as if they were normal, and punished them for their abnormality. We forgot that many of the inmates of prisons were mental cases, and that they were suffering from a mental disability which required sympathetic treatment and consideration. Was it right, for instance, to send to prison a neurasthenic whose case called for careful treatment and a cheerful and inspiring environment? The governors of our prisons ought to be medical and psychological experts, able to differentiate between different types of prisoners. The delinquent ought to be placed under a medical expert and only when all the circumstances of his case had been ascertained should a decision be come to as to his fate.

Mr. W. HUTCHISON said that he recently visited Maidstone Gaol, and asked the medical attendant some questions about the prisoners' diet. The medical attendant informed him that it was a scientific diet and that it had been discovered that prisoners for a short time after entering prison lost weight. Then they came to a point at which their weight went up, and they became much more healthy in the majority of cases than they had ever been before they came into prison.

Home Secretary's Reply.

Sir H. SAMUEL, replying to the debate, said that Dr. Salter had spoken of the necessity for observation homes, particularly for children and in London, and for special attention being given to the individual characteristics of the children and other delinquents so that medical or other measures might be adopted suitable to individual cases. That was, undoubtedly, of great importance, and Dr. Salter was entirely right in the view he had expressed. The present remand home in London was not satisfactory, but that was a matter requiring legislation. It concerned the County Council also, and if Dr. Salter could persuade the Council to take a forward view in the matter, no one would be more pleased than the Home Office or more ready to assist their efforts. The prison dietary had been framed after very careful medical investigation, and as a rule the prisoners put on weight considerably after they entered the gaols nowadays, but he would draw the attention of his expert advisers to the point raised by Dr. Salter, himself a medical man, with regard to the inclusion of fresh vegetables.

The debate was adjourned.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 27TH.

Control of Locusts.

Captain PETER MACDONALD asked the Secretary for the Colonies to what extent, as a result of the recent recognition of the Imperial Institute of Entomology in London as the international centre for the collection of data on the movements of locust swarms, it had been found possible to expedite work in this connexion; and how many foreign governments were coöperating in the work at the present time.—Sir P. CUNLIFFE-LISTER replied: The foreign Governments so far coöperating in the investigation into the breeding of locusts are those of France and Italy, covering their respective dependencies. The progress made already includes Anglo-French coöperation in an investigation of the breeding-grounds of the migratory locust in West Africa. His Majesty's Government have just received from the Committee on Locust Control of the Economic Advisory Council its fourth report, which deals with this question and is now under consideration. The programme of future work in coöperation is to be discussed at a further international meeting in Paris next July, and this will afford a convenient opportunity of considering any recommendations made in the report.

Silicosis.

Mr. TINKER asked the Home Secretary the number of workpeople in the coal-mining industry suffering from silicosis during the latest 12 months for which figures were available and the number who received compensation for this disease, giving separate figures for Lancashire.—Sir HERBERT SAMUEL replied: Silicosis is not notifiable and the only figures I can give are those of cases under the Workmen's Compensation Act. The Returns under that Act show that in 1930—which is the last year for which figures are at present available—there were 20 cases in which coalminers recovered compensation for disablement from silicosis. Information as to the distribution of these cases is not complete, but so far as known, only one of them occurred in Lancashire. I may add that I am informed that the Medical Board, which was set up in June last, has not so far issued any certificate in respect of any coalminer in Lancashire.

Dangerous Drugs.

Mr. DAVID GRENFELL asked the Home Secretary what was the production in Britain during the 12 months ended Dec. 31st, 1931, of cocaine, codeine, dionin, heroin, morphine, and peronin; whether the production was in excess of the requirements for medical and scientific purposes; and whether the convention for the limitation of the manufacture of narcotic drugs was operative in Great Britain.—Sir HERBERT SAMUEL replied: The answers to the second and third parts of the question are in the negative. The following statement deals with the first part of the question:

	oz.
Cocaine alkaloid and salts	14,903·036
Codeine	12,325·74
Dionin	2,013·06
Heroin (diacetylmorphine)	3,326·4
Morphine alkaloid and salts	46,520·74
Peronin	nil.

Offences against Young Persons.

Viscountess ASTOR asked the Home Secretary if, having regard to the increase in indecent assaults on young persons, especially on children under 12 years of age, the number of cases in which defendants are acquitted because the unsworn evidence of the child cannot be accepted without corroboration, and the difficulties of obtaining corroboration since these offences are usually committed when the child is alone, he will consider taking steps to give effect to the recommendations of the Committee on Sexual Offences against Young Persons that, whenever it is justifiable, the evidence of a child who appears able to tell a connected story will be taken on oath and that those conducting prosecutions should bear in mind that the absence of corroboration in the case of a child whose evidence has been given on oath is not a bar to a conviction.—Sir H. SAMUEL replied: It is obviously desirable that, wherever justifiable, the evidence of a child who can tell a connected story should be taken on oath and I am advised that in view of the judgment of the

Court of Criminal Appeal in R. *v.* Crocker (17 C.A.R. 4546) the absence of corroboration is not a bar in law to a conviction except where corroboration is required by Statute. The recommendations of the Committee on these points, which are really suggestions as to the presentation and reception of evidence were with other recommendations of the Committee commended to the careful consideration of all concerned in the circular which was issued from the Home Office on Sept. 17th, 1926. The recommendations in question were for the courts and others to consider rather than for the Home Secretary to give effect to; but no doubt the publicity given to the matter by this question and answer will attract the attention again of those concerned.

Mentally Defective Children.

Mr. RHYS DAVIES asked the President of the Board of Education whether the proportion of mentally deficient children to ordinary school-children was on the increase or decline in England and Wales.—Sir DONALD MACLEAN replied: During the last few years for which returns are available there has been practically no variation in the proportion of children in public elementary schools formally ascertained by school medical officers as mentally defective, but I am afraid that these figures cannot be used as a reliable guide to the actual incidence of this form of defect, owing to the absence of a strict uniformity of standard, and to other difficulties. The hon. Member will find a full discussion of the matter in paras. 86–90 of the report of the Joint Committee of the Board of Education and the Board of Control on the subject of Mental Deficiency, which was published in 1929.

Dangerous Drugs Convention.

Lieut.-Colonel FREMANTLE asked the Home Secretary whether British ratification of the 1931 convention for the limitation of the manufacture of narcotic drugs had yet been decided upon; and, if not, when a decision regarding ratification was likely to be made.—Sir HERBERT SAMUEL replied: It is the intention of His Majesty's Government to ratify this convention and, to enable this to be done, the Dangerous Drugs Act, 1932, was passed with the object of bringing our law into conformity with the provisions of the convention.

Lieut.-Colonel FREMANTLE: As this has already passed the other House how long will it be before there is ratification. Will it be before the summer?

Sir H. SAMUEL: I cannot give a precise date. We are in communication with the Dominions and Colonies on the subject.

MONDAY, MAY 2ND.

Opium Manufacture in India.

Mr. DAVID GRENFELL asked the Secretary for India if he could give figures showing the quantity and value of the opium manufactured in 1930–31 at the Government of India's opium factory; what part of this output was intended for consumption in India; and the total revenue of the Government of India from the sale of opium for consumption in India.—Sir S. HOARE replied: During the year ending Sept. 30th, 1930 (the latest date for which figures are available) 1,276,616 lb. of opium were manufactured, valued at Rs. 115,45 lakhs. Of this 705,067 lb., valued at Rs. 64·81 lakhs, were intended for consumption in India. The actual consumption was, however, much less. The Government of India sell opium for consumption in India to local governments at cost price. The excise revenue of local governments and administrations for the year ending March 31st, 1931, from opium was Rs. 318,72 lakhs, from which must be deducted charges, including the cost of the opium.

Mr. RHYS DAVIES asked the Secretary for India whether any steps were being taken by the Government of India to reduce the sale of opium manufactured at the Government of India's factory at Ghazipur for consumption in India, and what progress had been made in limiting the number of shops in India from which this opium could be purchased.—Sir S. HOARE replied: The distribution and sale of opium in the Provinces of British India is under the control of ministers responsible to their respective councils. The amount of opium manufactured at Ghazipur for consumption in India depends upon the demand from the Provinces. There has been a substantial and progressive reduction in recent years.

Question to Pensioners.

Mr. LOGAN asked the Minister of Pensions if he would authorise the deletion of Question 11 from Form M.P.I.F. 27; the present reasons for asking a man if he was in receipt of pension other than the disability pension and for particulars of all such pensions.

Mr. PRICE asked the Minister if he would delete Questions 12 to 18 inclusive from Form M.P.I.F. 27 in all cases where the pensioner was not in receipt of family allowances; whether his attention had been drawn to the objections pensioners had to the questions on the form; and if he would consult with the British Legion or some organisation representing pensioners, with a view to modifying the questions.—Major TRYON replied: The object of the form referred to is to secure the identification of pensioners. Inquiry for this purpose, which is made of a percentage of pensioners annually, was instituted to meet the express requirements of the Public Accounts Committee of this House to protect the Exchequer against personation. The answers to Questions 11 to 18 inclusive, in common with the answers to other questions on the form, serve a necessary purpose in this connexion, and I regret that I cannot agree to their omission.

Birth Control.

Mr. POTTER asked the Minister of Health if he would arrange for an early visit of inspection to the clinics for contraceptive advice in Withington and Crumpsall hospitals; and if he would make the report, when issued, available to Members of the House at an early date.—Mr. ERNEST BROWN replied: My right hon. friend will obtain a report on this work from the local authority and will then consider whether an inspection is desirable. He could not undertake to adopt the suggestion in the second part of the question.

Coroners' Juries.

Mr. EDWARD WILLIAMS asked the Home Secretary whether he would introduce legislation to provide that coroners' juries should in future be drawn from persons possessing such practical or theoretical knowledge as would enable them to weigh evidence properly before arriving at verdicts, and to provide for the preparation of lists of such qualified persons.—Mr. O. STANLEY (Under Secretary for Home Affairs) replied: No Sir. Legislation in the sense suggested would be incompatible with the jury system.

Animals and Poison Gas Experiments.

Lieut.-Colonel APPLIN asked the Financial Secretary to the War Office the number of horses and dogs, respectively, which had been the subject of poison gas experiments in Great Britain during 1930 and during 1931 at Porton, Cambridge, or elsewhere.—Mr. DUFF COOPER replied: Eight horses were used for experimental purposes at the Chemical Defence Experimental Station, Porton, in 1930. Apart from this, no horses or dogs have been used for experiments in connexion with chemical defence, either at Porton or Cambridge, during the two years in question.

TUESDAY, MAY 3RD.

Charter of the Radium Trust.

Sir ERNEST GRAHAM-LITTLE asked the Lord President of the Council whether any modification had been made of the terms of the charter of incorporation of the Radium Commission, by which it was required that one-half of the original members of the commission, to be selected by lot, should go out of office after a certain date and the remaining original members at a later date.—Mr. BALDWIN replied: The requirement in the charter of the National Radium Trust to which the hon. Member refers was varied by a supplemental charter granted to that body on July 23rd, 1931. I am sending the hon. Member a copy.

Birth Control Advice.

Mr. POTTER asked the Minister of Health whether clinics for contraceptive advice form an integral part of the maternity hospitals to which he distributed grants in aid.—Mr. ERNEST BROWN replied: No, Sir. Grants from the Exchequer are no longer paid direct to maternity hospitals, except for the training of midwives.

WOMEN'S NATIONAL HEALTH ASSOCIATION.—Our Dublin correspondent writes: "The Women's National Health Association held its annual meeting in the Royal College of Surgeons, Dublin, on April 28th, under the presidency of the Marchioness of Aberdeen and Temair. It is quite 25 years since Lady Aberdeen founded the Association. Its objects were, as she reminded the meeting, to arouse public interest in questions of health, to spread the knowledge of methods of preventing disease, and to promote the up-bringing of a healthy race. During the whole period of 25 years the Association has striven toward these ends, and the founder has a right to be proud of its achievements. Reports were read of the various activities of the Association—the Children's Fresh Air Fund, the Irish Goat Society, the Peamount Sanatorium, the Babies' Club, the Peamount After-Care Committee. Mr. H. E. F. Hall, superintendent of the Peamount Industrial Settlement, gave an interesting account of the progress of its work."

MEDICAL NEWS

University of Oxford.

The Romanes Lecture for 1932 will be delivered by Lord Moynihan, at 12 noon on Wednesday, June 1st, in the Sheldonian Theatre. Subject: The Advance of Medicine.

The examination for the degree of *Bachelor of Medicine* commences on June 15th and names of candidates must be received before May 31st. The examination for the degree of *Master of Surgery* commences on June 23rd and names must be received before June 4th.

University of Cambridge.

On April 30th the following degrees were conferred:—

M.Chir.—Hermon Taylor.

M.B. & B.Chir.—John Morris, Alan Eckford, A. G. J. Harris, and R. W. Malim.

M.B.—J. M. Matthew.

B.Chir.—R. M. Dowdeswell (by proxy), J. W. S. H. Lindahl, J. S. Barker, and A. H. Lankester.

Royal College of Physicians of London.

At a quarterly meeting held on April 28th, with Lord Dawson, the President, in the chair, the following members were elected to the Fellowship:—

Overseas.—Alexander Gordon Biggam, M.D. Edin. (Cairo); William Boyd, M.D. Edin. (Winnipeg); Roy Samuel Dobbin, M.D. Dublin (Cairo); Goldwin William Howland, M.B. Toronto (Toronto); Abd-el-Aziz Ismail (Cairo); Thomas William James Johnson, M.D. New Zeal. (New Zealand); Frederick Donald Herbert Blois Lawton, O.B.E., M.B. Melb. (Melbourne); Harold Douglas Singer, M.D. Lond. (Chicago); Hugh Stott, M.D. Lond. (Lucknow); and George Charles Willcocks, M.B. Sydney (Sydney).

Scotland, Wales, and Provinces.—George Allison Allan, M.D. Glasg. (Glasgow); John Alexander Murray Bligh, M.D. Liverp. (Liverpool); William Tregonwell Collier, M.C., M.D. Oxf. (Oxford); George Secretan Haynes, M.D. Camb. (Cambridge); Cyril Gray Imrie, M.D. Ontario (Sheffield); George Johnson Langley, M.D. Lond. (Manchester); William McAdam, M.D. Glasg. (Leeds); Percival Brooke Mumford, M.D. Manch. (Manchester); Alfred Parkin, M.D. Durh. (Newcastle-on-Tyne); and James Maclure Smellie, M.D. Edin. (Birmingham).

London.—Edward Arnold Carmichael, M.B. Edin.; Edward ffolliott Creed, M.D. Oxf.; Daniel Thomas Davies, M.D. Wales; Stanley Dodd, M.B. Camb.; Geoffrey Hadfield, M.D. Lond., Charles Felix Harris, M.D. Lond.; Godfrey Taunton Hebert, M.D. Oxf.; Richard Anderson Hickling, M.D. Camb.; Robert Daniel Lawrence, M.D. Aberd.; Douglas McAlpine, M.D. Glasg.; Sir Frederick Norton Kay Menzies, M.D. Edin.; Charles Edward Newman, M.D. Camb.; Charles Cyril Okell, M.B. Camb.; William Gifford Wyllie, M.D. Edin.; and Frederick Hugh Young, M.D. Camb.

The following candidates were admitted members of the College:—

John Fleming Brock, M.B. Oxf., L.R.C.P.; William Donald Wykeham Brooks, M.B. Oxf., L.R.C.P.; Walter Ford Connell, M.D. Q.U. Ont.; David McKee Dickson, M.B. New Zeal.; Reginald Ellis, M.D. Manch.; Thomas Miles Gilbert, M.B. Melb.; Ronald Thomson Grant, M.D. Glasg.; Michael Kremer, M.B. Lond., L.R.C.P.; Reginald William Luxton, M.B. Manch.; William Henry McMenemey, M.B. Oxf., L.R.C.P.; Harold Eric Martin, M.D. Manch.; Roy Lee Midgley, M.D. Lond., L.R.C.P.; Vincent Philip Norman, M.D. Durh.; John Noel O'Reilly, M.B. Oxf., L.R.C.P.; Lucy Parker, M.D. Lond., L.R.C.P.; Roy Kemball Price, M.B. Lond., L.R.C.P.; Ahmed Fahmy Ragab, M.B. Cairo; Robert Dickson Roach, M.D. McGill; Terence Stanley Rodgers, M.B. Lond., L.R.C.P.; Thomas Newton Rudd, M.B. Lond., L.R.C.P.; Hassan Shukry, M.B. Cairo; Mohan Singh, M.B. Punjab; Agneswara Aiyer Sreenivasan, L.R.C.P.; George Macdonald Thomson, M.B. Sydney; Emrys Williams, M.D. Lond., L.R.C.P.; and Francis Seaton Winton, L.R.C.P.

The thanks of the College were given to Dr. Raymond Crawfurd for his services as Visitor to the Medical Faculty of the Egyptian University and for his report.

The following were appointed as College representatives: Dr. F. G. Chandler, at the forthcoming Centenary Celebrations of the British Medical Association; Dr. J. W. Carr, on the Professional Classes Aid Council; Dr. A. S. MacNalty, at the Eighteenth Annual Conference of the National Association for the Prevention of Tuberculosis; and Lieut.-Colonel F. E. Fremantle, at the Forty-third Congress and Exhibition of the Royal Sanitary Institute.

Licences to practise were conferred upon 157 candidates (143 men and 14 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College.

The following are the names and medical schools of the successful candidates:—

A. L. Abeyewardene, L.M.S. Ceylon, Univ. College; H. Agar, M.B. Leeds; S. D. Ahuja, M.B. Punjab, Charing Cross; S. T. Anning, Camb. and Leeds; C. G. Baker, L.D.S., Guy's; W. C. Barber, Camb. and Manchester; Sarah N. S. Barker, M.B. Leeds; C. G. Barnes, St. Mary's; G. P. Barua, M.B. Calcutta, London; A. S. Baxi, M.B. Punjab, London; F. H. E. Beckett, Guy's; Mavis W. M. Beddall, Univ. College; J. G. Billington, Camb. and St. Thomas's; M. Blashka, Charing Cross; Jane Bonnell, Wales and King's College; H. W. L. Broadbent, Camb. and St. Mary's; M. J. Brookes, London; G. H. Brookman, St. Bart.'s; J. D. Burrows, St. Thomas's; Lilian M. Buxton, Birmingham; T. A. R. Callender, London; J. Cann, Camb. and St. Thomas's; D. B. Cater, Camb. and Charing Cross; I. A. Cathie, Guy's; J. R. Chambers, Camb. and Middlesex; G. H. Cooray, Ceylon and Univ. College; F. N. Corfe, L.D.S. Guy's; D. R. Crabb, St. Bart.'s; G. W. Crimmin, Camb. and St. Thomas's; Elizabeth Curphey, Westminster; R. P. Dalal, M.B. Bomb., Bombay; P. H. Daly, St. Mary's; A. M. Davies, Bristol; D. T. Davies, Birmingham; T. G. Davies, Birmingham; E. A. Devenish, Univ. College; D. C. De Wet, St. Thomas's; L. Dexter, St. Bart.'s; G. E. Dunkerley, Univ. College; H. Edwards, Cardiff and Guy's; R. T. Elven, Guy's; Q. F. Evans, St. Thomas's; W. B. Evans, Camb. and St. Bart.'s; W. G. Evans, Camb. and St. Mary's; A. L. Eyre-Brook, Bristol; K. Fawssett, St. Thomas's; H. F. M. Finzel, Bristol; J. H. Fisher, Camb. and London; J. F. P. Forster, Birmingham; A. E. Francis, St. Bart.'s; L. Freeman, St. Bart.'s; T. A. Gavin, Guy's; G. H. Gibbens, St. Thomas's; R. G. Gilbert, St. Bart.'s; K. J. Gilchrist, Guy's; A. F. Goode, Birmingham; A. J. Grace, Oxford and Guy's; D. C. Green, St. Thomas's; L. Greenfield, London; Catherine E. I. Greenshields, M.B. Liverp.; J. N. Groves, Camb. and St. Bart.'s; C. S. Hall-Smith, Camb. and St. Bart.'s; O. C. Hamilton-Jones, Liverpool; C. F. Hamilton-Turner, Oxford and St. George's; G. R. Hargreaves, Univ. College; Helen A. Hatrick, Univ. College; F. R. Hayward, Guy's; W. N. Hine, Middlesex; R. A. P. Hogbin, Guy's; A. Hollinrake, St. Bart.'s; M. D. C. Hosford, St. Bart.'s; B. Hynes, Middlesex; D. H. Irish, Guy's; J. M. Jackson, St. Bart.'s; W. B. Johnston, St. Mary's; T. B. Jones, Camb. and St. Thomas's; T. B. Jones, Westminster; B. L. Kapur, M.B. Punjab, London; R. Kempthorne, Oxford and Univ. College; A. L. Kenyon, Manchester; L. Kessel, Guy's; Florence E. Kingsley, Westminster; R. Knox, Oxford and St. Bart.'s; W. Kravchick, St. Bart.'s; A. W. D. Leishman, Oxford and St. Bart.'s; A. A. Lewis, Guy's; J. R. B. McBride, St. Bart.'s; M. N. Mahmood, M.B. Punjab, Middlesex; Haile Marsten, Charing Cross; J. R. M. Martin, St. Bart.'s; A. R. R. Mears, Camb. and St. Bart.'s; G. J. Meikle, Camb. and Middlesex; J. Metcalf, Camb. and London; J. A. W. Miller, Guy's; T. D. F. Money, Camb. and St. Thomas's; B. C. Murless, Camb. and St. Bart.'s; W. Mushin, London; Alice M. Naish, Camb. and Royal Free; D. R. Narang, M.B. Punjab, London; R. W. Nevin, Camb. and St. Thomas's; E. Palmer, Camb. and King's College; G. B. Palmer, L.D.S. Guy's; A. Papert, Witwatersrand and St. Bart.'s; J. Parkes, Camb. and St. Thomas's; R. Parkinson, London; C. S. Patel, M.B. Bomb.; O. R. L. L. Plunkett, St. George's; C. B. R. Pollock, Guy's; V. T. Powell, Cardiff; F. Radcliffe, Camb. and St. Bart.'s; K. S. Ranganathan, Madras and St. Bart.'s; H. M. Rashid, Birmingham; J. C. Read, L.D.S. Guy's; L. Redhouse, Witwatersrand and Middlesex; R. G. Reid, Guy's; J. P. Reidy, London; L. O. Roberts, St. Bart.'s; J. Rosenberg, Guy's; E. B. Rotherham, London; A. C. Rumsey, Camb. and London; Frances N. Salisbury, Bristol; O. E. L. Sampson, Bristol; R. S. Sandhu, M.B. Punjab; S. B. H. Saunders, Camb. and St. Bart.'s; O. A. Savage, St. Bart.'s; G. C. Sawyer, Guy's; M. H. P. Sayers, St. Thomas's; E. F. Scowen, St. Bart.'s; B. Shanovitch, London; S. M. Silverstone, Camb. and Guy's; H. M. Singer, King's College; S. F. Smith, St. Thomas's; J. R. Strong, St. Bart.'s; S. C. Suggit, Univ. College; S. K. K. Sze, Camb. and St. Thomas's; W. S. Tegner, Oxford and London; E. H. Thierry, Univ. College; C. W. Thomas, Camb. and St. Thomas's; G. L. Timms, St. Thomas's; J. B. L. Tombleson, St. Thomas's; O. S. Tubbs, Camb. and St. Bart.'s; D. Turner, Birmingham; J. T. Turner, Camb. and St. Thomas's; C. M. Vaillant, Oxford and Liverpool; J. M. Vaizey, Camb. and London; O. J. Vaughan-Jackson, Oxford and London; D. P. Viljoen, Witwatersrand and St. Bart.'s; Lilian B. M. Watch, Royal Free; C. J. Watson, Camb. and St. George's; Phyllis E. Watson, Camb. and Charing Cross; Celia Weinstein, Royal Free; H. D. White, Camb. and St. Bart.'s; E. W. Wilkins, Birmingham; R. A. Wilmshurst, St. Thomas's; A. J. K. Wilson, Birmingham; W. Wilson, Camb. and St. Bart.'s; and M. Zinober, Cape and Middlesex.

The undermentioned diplomas were conferred, jointly with the Royal College of Surgeons, upon the following candidates:—

Diploma in Tropical Medicine and Hygiene.—G. Ameratunga, R. M. Buchanan, Dorothy D. Chacko, Jane G. E. F. Cummins, G. C. H. Franklin, H. S. Gear, A. Hoff, C. G. Hoole, S. R. Iyengar, S. Petiyagoda, A. V. Pieris, G. W. Puvimanasingham, H. Richards, J. Rodger, B. N. Sharma, Mabel I. Silver, R. Sivasambandan, J. T. Smith, R. H. B. Snow, C. A. Stanley, R. T. Unruh, and J. E. Walcott.

Diploma in Gynæcology and Obstetrics.—D. P. de Villiers.

Royal Medical Benevolent Fund Guild.

A dance, organised by this Guild, is to be held on June 9th in the Great Hall of the British Medical Association, Tavistock-square, London, S.W. It will be the thirteenth of a series, and the committee is anxious that members of the medical profession and others interested in this fund should lend their support. Tickets (single 6s., double 11s.) may be had from Mrs. Oldershaw, 26, Upper Wimpole-street, W.1.

University of Glasgow.

On April 16th the degree of M.D., with high commendation, was conferred on Dr. George Brown. The names of other recipients of degrees appeared on p. 913 of our issue of April 23rd.

University of London Medical Graduates' Society.

The Earl of Athlone, Chancellor of the University of London, will be the guest of honour at the annual dinner of this society to be held at the Langham Hotel on May 11th. Tickets may be had from the hon. secretaries at 11, Chandos-street, W.1.

Institute of Psycho-Analysis

Mrs. Susan Isaacs, D.Sc., will give a course of lectures at the London Clinic of Psycho-Analysis, 36, Gloucester-place, W.1, on Fridays at 8.30 P.M., from May 6th to June 24th, on the Contributions of Psycho-Analysis to Anthropology. Opportunity for discussion will be given at the close of each lecture.

An Italian Medical Prize.

It is announced from Rome that Sir Aldo Castellani, director of tropical medicine and dermatology at the Ross Institute, and physician to the Italian Hospital, London, is among four recipients of the Mussolini prize of 50,000 lire awarded for special distinction during the past year.

Royal Institution

The annual meeting of the members of the Royal Institution of Great Britain was held on May 2nd. Lord Eustace Percy was elected president, Sir Robert Robertson treasurer, and Major C. E. S. Phillips secretary, for the coming year. Among the managers are Mr. Ernest Clarke, F.R.C.S., Sir James Crichton-Browne, M.D., Dr. K. R. Hay, and Sir Arthur Keith, M.D. Among the visitors are Prof. G. E. Gask, F.R.C.S., and Dr. Russell Reynolds.

Medical Missionary Work in the Tropics.

A conference of medical students on this subject will be held at the London School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1, on May 10th, from 3.30 to 7 P.M.

The Annual Medical Missionary Breakfast of the Medical Prayer Union will be held on May 11th, at the Refectory, University College, Gower-street, W.C.1, at 8 A.M. An address will be given by Dr. C. C. Chesterman, of Yakusu, Congo Belge, W. Africa.

Those desiring to be present at either of these gatherings should communicate with Dr. Tom Jays, Livingstone College, Leyton, E.10.

Mount Vernon Hospital Anti-Cancer Education League.

An inaugural meeting of this League was held on April 27th at the Town Hall, Windsor, the mayor, Mr. F. L. Ellen, being in the chair, and Dr. A. D. Crofts, medical officer of health, was also present. Dr. Malcolm Donaldson, in an address explaining the origin and purpose of the League, said that the cancer problem might be compared to a gigantic jigsaw puzzle, in which, although pieces had already been put in position, the whole picture would not be clear until the last piece was put in its place. On this great problem were many groups of workers, some studying the cause of cancer, others the treatment, and others again the best methods of early diagnosis.

His chief concern that evening was to stress the importance of early diagnosis. He referred to statistical reports which showed that in early cases of cancer of the breast, 80 per cent. were cured. It had been estimated that less than 50 per cent. of patients suffering from cancer sought medical advice in time to have appropriate treatment, and many could only be alleviated by means of drugs. The reason for this state of affairs was that cancer in its early stages gave rise to no pain and, generally, very slight symptoms. He pointed out that it was impossible to teach the public the symptoms that might suggest the possibility of cancer, and, moreover, that such a course would be inadvisable as it would only lead to people thinking about the subject every time that they felt unwell. It was this fact that had led the authorities at the Mount Vernon Hospital to inaugurate this League, in order to persuade every man and woman over 40 years of age to go and be examined by their doctors twice a year, to see that there was no condition present which, if untreated, might lead to cancer. If people could be induced to follow this method it would rid them of fear of cancer to a great extent. It was hoped to form centres, such as was being formed at Windsor, in every town in England. His address was followed by a demonstration of Dr. R. G. Canti's film.

Biochemical Society.

This society will hold its next meeting in the department of biochemistry at Oxford, at 2.30 P.M., on Saturday, May 7th.

Extension of Stannington Children's Sanatorium.

The Duchess of Northumberland last week laid the foundation-stone of a new open-air school in the grounds of this sanatorium, near Newcastle-on-Tyne. The number of beds has increased from 40 in 1904, to 310, all occupied. The sanatorium serves six counties.

Honorarium to a Medical Man.

The Legislature of Trinidad has voted £200 as an honorarium to Dr. J. L. Pawan, government bacteriologist to the Colony, who has proved that bats were the carriers responsible for a recent outbreak of rabies in the island. The outbreak was described by Dr. E. Weston Hurst and Dr. Pawan in THE LANCET (1931, ii., 622).

A Middlesbrough Difficulty.

Middlesbrough Hospitals Committee is experiencing difficulty in filling the positions of assistant house surgeon and physician. Two applicants who were offered the post replied that they had already accepted other appointments. It is officially stated that "the financial inducements are ample" and it is suggested that the scarcity is partly due to public authorities engaging so many medical men.

Visit to Italian Health Resorts.

A party of medical men will leave this country next September for a fortnight's tour of spas and other resorts in the Italian Alps, on the Lakes, and on the Ligurian Riviera. The group will be in charge of an English-speaking Italian doctor and will be conveyed through Italy in a special train. Each doctor will have the option of taking his wife, son, or daughter, and at the conclusion of the tour members will be at liberty to visit other parts of Italy. Details may be had from the British representative of the Italian State Tourist Department (E.N.I.T.), Major W. Stormont, 16, Waterloo-place, Regent-street, London, S.W.1.

Manchester Royal Infirmary.

The annual report shows that last year there were 11,487 in-patients, an increase of 184, and 48,693 out-patients, a decrease of 2000. In-patients cost £3 8*s.* 2*d.* per week, and stayed an average of 17·64 days, as against 17·64 days in 1930. At the Barnes Convalescent Hospital, Cheadle, 1220 patients were admitted; they stayed 34·58 days on the average and the annual cost per occupied bed was £89 14*s.* 10*d.* By increasing the nursing staff from 224 to 270 it has been possible to reduce working hours. A preliminary training school for nurses has been established.

National Hospital, Queen-square.

A post-graduate course on diseases of the nervous system will be held at this hospital from May 9th to July 1st. Clinical lectures and demonstrations will be given at 3.30 P.M. each weekday except Wednesday and Saturday; there will be teaching in the out-patient department at 2 P.M. each weekday except Saturday, and pathological lectures at noon on Fridays. Further, a course of ten lectures on the anatomy and physiology of the nervous system will be given at noon on Tuesdays and Thursdays if there are enough applicants and there will be ten clinical demonstrations, chiefly on methods of examination of the nervous system, at 5 P.M. on the same days. Particulars may be had from the secretary of the Medical School, National Hospital, Queen-square, London, W.C.1.

International Union against Tuberculosis.

The Italian Fascist National Federation against Tuberculosis has placed at the disposal of this Union two scholarships at the Benito Mussolini Institute in Rome. These competitive scholarships, each of the value of 6000 lire plus board and lodging, are intended to enable foreign medical practitioners to stay at the Institute for the purpose of following a course of studies during an academic year of eight months (Nov. 15th to July 15th). They will preferably be awarded to young physicians who are already familiar with tuberculosis problems. The kind of work undertaken will be subject to an agreement between the director of the Institute and the candidate. The scholarships will be awarded at the meeting of the executive committee of the International Union in September next. The names of candidates, accompanied by particulars of their age, qualifications, and professional experience must be forwarded to the secretariat of the Union not later than July 15th. No candidature will be taken into consideration unless it has been forwarded by a government or association belonging to the International Union, and applications from Great Britain and Northern Ireland should reach the secretary of the National Union against Tuberculosis (Tavistock House North, Tavistock-square, London, W.C.1) before July 10th.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, May 10th.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Election of Officers and Council. 8.30 P.M., PSYCHIATRY. Election of Officers and Council. Dr. Noel H. M. Burke: Some Aspects of Mental Deficiency. (Cinematograph Demonstration.)
WEDNESDAY.—5 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Election of Officers and Council. 5.15 P.M., SUBSECTION OF PROCTOLOGY: UROLOGY. Joint Discussions: Urinary Complications of Diseases of the Large Intestine. Openers: Mr. Hugh Lett and Mr. Cyril Nitch, Urology. Mr. J. P. Lockhart-Mummery and Mr. Lionel Norbury, Proctology. Followed by Dr. Cuthbert Dukes, Mr. Landray, Prof. G. Grey Turner, and others.
FRIDAY.—5.30 P.M. (Cases at 4.30 P.M.) CLINICAL. Election of Officers and Council.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.1.
MONDAY, May 9th.—8 P.M., Annual General Meeting. 9 P.M., Annual Oration, by Sir James Berry, on Fallen Idols. Conversazione.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, May 10th.—9 P.M. (at the Great Western Royal Hotel, Paddington, W.2), Prof. J. Ernest Frazer: Some Skulls and Other Old Bones.

HARVEIAN SOCIETY OF LONDON.
THURSDAY, May 12th.—8.30 P.M. (at Paddington Town Hall), Dr. Geoffrey Holmes: Spa Treatment; With Special Reference to British Spas. (Illustrated by film.)

SOUTH-WEST LONDON MEDICAL SOCIETY. Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.
WEDNESDAY, May 11th.—9 P.M., Dr. H. Yellowlees: The Lunatick, the Lover, and the Poet.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.
THURSDAY, May 12th.—8.30 P.M., Dr. C. L. C. Burns: Individual Psychology and Catholic Belief.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 9th to SATURDAY, May 14th.—LONDON LIGHT AND ELECTRICAL CLINIC, Ranelagh-road, S.W. Evening Course in Physical Medicine, Mondays and Wednesdays at 8.30 P.M. Lectures and demonstrations of cases.—MAUDSLEY HOSPITAL, Denmark-hill, S.E.5. Course in Psychological Medicine. Afternoons only.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. All-day Clinical Course in Diseases of the Throat, Nose, and Ear.—ST. JOHN'S HOSPITAL, Leicester-square, W.C.2. Afternoon course in Dermatology. (The above Courses are open only to Members of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.
MONDAY, May 9th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards. Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture), Dr. Grainger Stewart: Subarachnoid Hæmorrhage.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture), Mr. Hamblen Thomas: Treatment of Deafness.
WEDNESDAY.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.
THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary, and Eye Out-patients. 4.15 P.M. (Lecture), Mr. Simmonds: Injuries and their Medico-Legal Aspect.
FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.
SATURDAY.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical Out-patients. The lectures at 4.15 P.M. on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

UNIVERSITY COLLEGE, Gower-street, W.C.
THURSDAY, May 12th, and following FRIDAY.—5.30 P.M., Prof. W. R. Hess (Zurich): The Autonomic Nervous System.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, May 11th.—Dr. Nathan Mutch's lecture has been postponed.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, May 12th.—4.30 P.M., Mr. L. E. C. Norbury: Some Complications of Diverticula of the Colon.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.
WEDNESDAY, May 11th.—3 P.M., Mr. F. J. F. Barrington: Symptoms, Signs, and Diagnosis of Renal Tuberculosis.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.
WEDNESDAY, May 11th.—4.30 P.M., Mr. M. Donaldson: Radiotherapy and Gynæcology.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
MONDAY, May 9th.—5 P.M., Dr. H. MacCormac: Treatment of Syphilis.
TUESDAY.—5 P.M., Dr. W. N. Goldsmith: The Nervous System in Relation to Skin Diseases.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Infections of the Skin with Yeast-like Organisms.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, May 10th.—4.15 P.M., Dr. E. B. Leech: Asthma Cures.

UNIVERSITY OF BIRMINGHAM.
WEDNESDAY, May 11th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Fourth of five William Withering memorial lectures.)
THURSDAY.—4 P.M., Prof. Seymour Barling: Operative Treatment of Toxic Goitre. (Ingleby lectures.)

WESTERN INFIRMARY, Glasgow.
WEDNESDAY, May 11th.—4.15 P.M., Dr. A. A. Charteris: Radium Therapy.

Appointments

HENDERSON, D. K., M.D., Ch.B. Edin., has been appointed Physician Superintendent Royal Edinburgh Hospital for Mental Disorders, and Professor of Psychiatry in the University of Edinburgh.

London County Council: BARLING, B., M.D., M.R.C.P. (St. Mary, Islington), FATTI, L., M.B., B.S., M.R.C.S., L.R.C.P. (Highgate), HOOPER, O., F.R.C.S. (St. Stephen's), PEAKE, H. L., F.R.C.S. (St. Olave's), RICHARDS, A. M., M.D. (Dulwich), ROANTREE, W. B., F.R.C.S. (St. Pancras), SHEPHERD, T. (Miss), M.D. (St. James's), SIMMONS, J. H. M.D. M.R.C.P. (St. Alfege's), WILKIE, D., F.R.C.S. (St. Charles'), YOUNG, B. A., M.D., M.R.C.P. (St. Peter's, Whitechapel), Senior Assistant Medical Officers; BAYLEY, A. W., M.B., B.S. (Mile End), BOLAND, C. R., M.D., F.R.C.S. (Hackney), FIELD, A. B. (Miss), M.R.C.S., L.R.C.P. (St. Mary, Islington), GABE, J., F.R.C.S. (St. Alfege's), GIBBS, E. G., M.D., F.R.C.S. (Bethnal Green), HOSEASON, A. S., M.B., B.S., M.R.C.S., M.R.C.P. (St. Giles'), LIBMAN, J., M.R.C.S. (Archway), LINFORD, H. (Miss), M.D. (North Eastern), RATAZZI, L. L., M.B., Ch.B. (St. John's), SELBOURNE, H. A. H., M.D. (Lewisham), Assistant Medical Officers; JOHNSTONE, J. G., M.B., Ch.B. (Princess Mary's Hosp. for Children), Medical Superintendent; NASH, H. K. G., M.R.C.S., L.R.C.P. (St. James'), House Physician.

Certifying Surgeons under the Factory and Workshop Acts: BARNES, W. A., M.B., B.Chir. Camb. (Woburn Sands); CLAYTON-JONES, E., L.M.S.S.A., M.R.C.S. (Cranbrook).

Births, Marriages, and Deaths

BIRTHS.

CARLING.—On May 1st, at Normandy, Alton, Hants, the wife of Dr. W. Russell Carling, of a son.
LANGMEAD.—On April 25th, at The Royal Chase, Tunbridge Wells, the wife of Dr. L. B. Langmead, of a daughter.
PUDDY.—On April 28th, at Point House, Litcham, Norfolk, the wife of E. Ivimy Puddy, M.B., B.S., of a daughter.
SAVIN.—On May 1st, 1932, at 174, Sutherland-avenue, W.9, to the wife of L. H. Savin, M.D., F.R.C.S.—a son.

MARRIAGES.

GROSS—CUNNINGTON.—On April 29th, at St. Anselm's, Davies-street, W., Capt. K. H. A. Gross, I.M.S., to Joan Cunnington, of Gosfield, Essex.
PARKES—MCQUEEN.—On April 27th, at Christ Church, Quinton, Birmingham, Percy Whitehouse Parkes, M.R.C.S., to Mary Isabel, eldest daughter of Dr. and Mrs. A. D. McQueen, Quinton, Birmingham.

DEATHS.

BOURNE.—On April 24th, at Dale View, Willingdon, Henry Bourne, M.B., B.S., late of Devonshire-place, Eastbourne, aged 53 years.
DRUMMOND.—On April 28th, at Saville-place, Newcastle-on-Tyne, David Drummond, Kt., C.B.E., M.A., M.D., D.C.L., LL.D., of Marchbank Wood, Beattock, Dumfriesshire, in his 80th year.
HARE.—On April 25th, Evan Herring Hare, M.A., F.R.C.S., of Hornsey.
LAW.—On April 26th, at Littleham, Exmouth, Alfred Roberts Law, M.D., aged 86.
RODEN.—On April 24th, at The Hollies, Droitwich, suddenly, Percy Austen Roden, M.D., J.P., in his 73rd year.
RODRIGUEZ.—On April 6th, 1932, at Port of Spain, Trinidad, B.W.I., Faustin Albert Rodriguez, M.B., C.M., late Medical Officer, Arima, Trinidad.
SCATLIFF.—On April 29th, Harold Harris Elborough Scatliff, M.A., M.R.C.S., L.R.C.P., of Marine Parade, Brighton, aged 56 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE HEALTH OF MERCHANT SEAMEN IN 1930.

BY FLEET-SURGEON W. E. HOME, O.B.E.

THE annual return for 1930 of deaths on vessels registered in the United Kingdom [1] has been recently issued, much the same in form as last year, though it no longer hints that it provides something like a death-rate. It tabulates the deaths of all seamen in the mercantile marine, and the ages at death of British and foreign seamen. All we want now to provide a death-rate is a considered statement of the numbers habitually at risk, and we should soon get that, as the Interdepartmental Committee has been deliberating now for two years. The return tells us that a census of seamen is now taken every year, by numbers and ages, and the relevant figures for 1930 might well have been printed in this return; formerly the census was taken only every five years. By the kindness of the Board of Trade I was able to find the figures in a supplement to the *Board of Trade Journal* for July 30th, 1931. The "First Crews" of ships were this year (1930) 237,110, but by the census figures, taken on March 31st, the number of seamen employed that day on all British ships were 194,633: 80 per cent. of "First Crews"; 127,518 British seamen, 14,433 foreigners, and 53,682 Lascars.

For British and foreign seamen the ages at death are stated in the return, those from violence, separately, in Table VI.; those by disease, jointly, in Table VII. By ages these deaths are grouped as in the Registrar-General's decennial supplement on occupational mortality, so it would have been convenient if the ages had been similarly grouped in the census, thus giving opportunity for calculating readily death-rates year by year. But death-rates are unfamiliar to the Board of Trade, being really a concern of the Registrar-General, and thus of the Ministry of Health; and the ages in the census are inconveniently grouped. When trouble has been taken to prepare and print four columns of deaths, at ages 20–24, 25–34, 35–44, 45–54, why make that trouble less than half its value by not reporting in each case the numbers from amongst which these deaths arose? Had this been done comparison could have been made with the death-rates of the army or the navy, in neither of which are there any material number of persons above the age of 45. As those in the merchant marine of ages 35–44 and 45–54 are reported together, this comparison cannot be usefully made. The Board of Trade had not this difficulty in mind, but it is implicit in the choice of age-limits they have made. It would be of advantage, too, to print the deaths at the particular ages of British seamen only, or separately, to assist in a comparison with those of other British workers, but we have no figures by reference to which we can interpret the combined ages at death of British and foreign seamen as given.

Though the numbers of seamen are fewer in 1930, the deaths from disease were more (for British seamen 370 against 324), but from violence they were less (316 against 431), and there were 100 fewer lives lost in casualties to the ships. Taking the deaths and census figures, we get a death-rate for British seamen 5·38, for foreigners 6·45, and for Lascars 5·1, figures quite likely to be correct to the first decimal place, and really what more does one want to make an effective comparison possible from year to year? The death-rate in the navy in 1930 was 2·47, in the army the same, but the average age in the army is 23, in the navy 27, and among British merchant seamen 32, and the older the group the higher the death-rate expected. The most frequent causes of deaths of British seamen from violence were: falls overboard or on deck, 46; falls down hatchways, 30; drowned in dock, 40; suicide, 37; missing at sea, 33. Nothing is said in the return, or anywhere else apparently, about the measures taken to diminish these deaths of seamen, while it may be pointed out that three pages of the report of the Chief Inspector of Factories for 1930 were devoted to accidents at the docks and to the assiduous preventive measures taken in behalf of dock labourers.

Among the deaths from disease we find these figures: circulatory system, about 60; pneumonia, 43; respiratory tubercle, 33; malaria, 12; enteric, 9; and small-pox, 1. Who is there to see that British merchant seamen are vaccinated or inoculated as they should be, who will consider how they get pneumonia, or if they suffer from lead poisoning? These are really questions for the Ministry of Health, and will doubtless be handed over to it by the committee. The Home Office, when it had charge of the health in factories, developed a good medical department, but in its 70 years of dealing with the health of seamen the Board of Trade has not got itself even a rudimentary medical staff, but has contented itself with intervening between the seamen and the experts of the Ministry of Health who might save the seamen's health.

Death-rates in 1930

from pneumonia were	British, 0·33	Lascars, 0·53
from pulmonary tuberculosis were	,, 0·26	,, 0·59

Lascars have by statute 72 cubic feet, British 120. Five Lascars occupy the same space on a deck as three British seamen; are we surprised that the Lascars are more susceptible to pneumonia and pulmonary tuberculosis?

[1] Return of Shipping Casualties to and Deaths on Vessels registered in the United Kingdom, in the year ended Dec. 31st, 1930. H.M. Stationery Office. 1931. Pp. 8. 9d.

BLOOD GROUPS.

A MEETING of the Royal Anthropological Institute on April 22nd, with Prof. G. ELLIOT SMITH in the chair, was devoted to a discussion on Blood Groups.

Prof. J. B. S. HALDANE began by drawing attention to the relationship between the very old science of anthropology and the young science of genetics. Physical anthropologists had accumulated an enormous mass of material that served certain purposes, but a very critical attitude was necessary when those data were used to support speculations of racial origins. Interpretation had become much more exact since the rediscovery of Mendel's work, but progress had been slowest with man, and much uncritical material in human genetics had been published. The evidence for the existence of genes in man was limited to certain rather rare pathological conditions and to the subject under discussion. Genetics included the facts grouped under heredity and those grouped under segregation; genetic analysis was based on the fact that a parent handed unto his child not characters but self-perpetuating units in the nucleus of the cell—genes or Mendelian factors. The visible expression of a gene varied with circumstances; the gene was, as it were, a photographic plate that needed developing. For instance, there was a gene which made the fat of rabbits turn yellow if their food contained carotene; if the rabbit was fed on swedes, however, the fat remained white. If, therefore, an anthropological character was to yield results capable of genetical analysis it must: (1) be determined by a small number of genes; (2) be separating the population into groups which were not particularly rare; and it must not (3) be strongly affected by environment; or (4) be subject to natural or social selection. All these criteria were so far fulfilled only for the set of characters which determined the blood grouping.

The inheritance of these characters was quite simple; there were only two types of chromosome, and therefore an individual could have only two of these genes; in gametic mitosis only one could

pass to the germ cell. The child of an AB parent could thus receive either A or B; the child of two O parents could receive neither; the child of an A could have either two A's or one A and one inactive gene (R), and the same applied to a child of B. It was an absolute rule that the child could not have in its corpuscles anything that was not in the blood of its parents. If an AB married an O the children must have either A or B; none of the children would resemble either father or mother. If one parent belonged to the AB group no child could belong to the O group.

Prof. Haldane then quoted certain data showing how these laws of inheritance had been proved on very large series, notably by Haselhorst. Exceptions of the order of about five in a thousand had been found, but were all explicable as due to illegitimacy. Only one inexplicable case was known: an AB mother had had an O child. In all Mendelian work, however, exceptions of the order of 1/2000 were apt to occur: possibly the mother had had three chromosomes instead of two, or a mutation process had occurred.

RACIAL DISTRIBUTION.

Blood groups would give a clue to racial origins—though a largely negative clue—for their distribution varied in different races, and was affected very slowly, if at all, by environment. Hungarian gypsies, for instance, showed 6 per cent. of AB and 39 per cent. of B, while Hungarian Magyars showed 12 per cent. of AB and 19 per cent. of B, and Indians 9 per cent. of AB and 41 per cent. of B. A map of the world showing the proportions of the B gene gave remarkable "contour" lines, suggesting that a wave of B had started in Central Asia, and spread thence in all directions; B was unknown in Australia and very rare in Esquimos and the aboriginals of North, Central, and South America. The only sample giving more than 30 per cent. of B was taken in the Punjab, but B was also common in the Ukraine. A similar map for A would be difficult to make, because A consisted of two classes (A and A^1) which could only be distinguished by a refined technique.

Other genes by which races could be classified were corpuscular agglutinogens which gave a reaction with rabbit sera: these were called M and N; everybody had M or N, but the proportions varied in different races. Another differentiating quality was the ability to taste bitterness in dry phenyl-thiocarbamide placed on the tongue; about two-thirds of people appreciated no taste. The evidence suggested that this ability was a simple Mendelian recessive, in which case it constituted another differentiating gene unlikely to be influenced by natural or social selection.

Dr. L. S. PENROSE said that his tests of over 500 mental defectives had shown only 2·2 per cent. of group AB. The study of blood groups in this country was very much neglected; in Germany a large survey had been made by local practitioners, and in Holland a national survey at a central institution had suggested some correlation between B and dark hair.

Prof. H. H. WOOLLARD said that the centre of Australia had yielded no B at all, but 60 per cent. of A. This suggested that the aboriginal had colonised Australia from one small canoe party. He was of opinion that the blood groups had first appeared, by gene mutation, in a common ancestor of the apes and man.

Prof. RUGGLES GATES described his tests of Esquimos in the Canadian Arctic: they were chiefly O, like the Red Indians, but a group at the mouth of the Mackenzie river had shown a very high percentage of B. The absence of A and B from these races indicated early isolation. Probably B had occurred as a mutation very much later than A. In a recent paper, work on Tierra del Fuegans had been described: Twenty-two Onas, living on the mainland, had shown 20 examples of O; 30 out of 33 Yaghans—a small island community numbering only 73 in all—had been B; two Alakalufes had both been B. It was extraordinary to find B—a central Asian characteristic—in this area!

Dr. H. BREWER described two donors who had come to him to be tested for the blood transfusion service; they had been classed as group O and had served satisfactorily four and five times respectively. Then some suspicion had arisen; they had been retested and grouped as "B," subsequently giving satisfactory service in that category.

Prof. LANCELOT HOGBEN said that B was very high—about 23 per cent. in 600 cases—among the Bantu, and also among the Senegalese, about 21 per cent., but the grouping of the Bushmen was roughly that of this country. This indicated a drift of B southward, with the Bantu migration, into a country previously showing little B.

Dr. MORANT asked if there were any sex differences in the blood groups.—Mr. G. POWELL asked if there was any difference between the higher and lower social classes.—Prof. C. G. SELIGMAN asked if the high percentage of B were associated with Mongol characteristics.

The CHAIRMAN said that anthropologists did not yet know how to fit these tentative new facts into existing ideas of race. Information was pouring in at an amazing rate, and it would be rash to try to formulate any comprehensive interpretation at present.

Prof. HALDANE, in reply, expressed his preference for the diffusion theory, rather than the idea of a parallel origin. There were no sex differences; some German figures seemed to show a difference between criminals and professors, but class differences had not been fully worked out. B was not associated with Mongol characteristics; probably there had been a big outburst of B from Central Asia after China was more or less settled.

THE DEFILEMENT OF PAINT.

To the Editor of THE LANCET.

SIR,—In the springtime many amateur house-painters splash paint on their faces, arms, and hands. The usual paint solvents are paraffin, turpentine, and linseed oil. There are objections to all. Linseed oil, though bland, has to be kept in a bottle and when being used is too easily flowing and spilt. I have discovered that white vaseline mixed in a jar with a requisite quantity of linseed oil and well stirred to a thick creamy consistency is most useful for removing paint spots from the skin without any deleterious effect. The jar can be kept handy and the cream should be thick enough not to spill or run when the jar is inverted. It can be applied with a small clean rag or the finger tip.

I am, Sir, yours faithfully,

London, April 14th, 1932. F. W. W.

COATS, GOWNS, AND SMOCKS.

IMPROVED patterns in white drill coats and gowns for doctors and dentists are now available. Messrs. E. and R. Garrould, Ltd., supply a smock overall with short sleeves, which can be used where a full-length operating gown is not required, and short coats can be had with stand-up or ordinary tailored collars. The dentist's coat has removable buttons down the side and a belt at the back only. The operating gown can be supplied not only in white drill but in sterilisable waterproof material.

Dr. W. BENTON (M.O.H., East Ham) informs us that the son of a medical practitioner of Vienna, aged 15, who speaks good English, is desirous of visiting England during the vacation, July and August. Board-residence is offered at his home in Vienna suburb, in exchange for the same in or near London, to the son of medical man about the same age. Communications should be addressed in the first instance to Dr. Benton, at the Town Hall, East Ham, E.6.

A WALKING CHAIR FOR CRIPPLES.

IN institutions where large numbers of paralysed or disabled children are cared for, it is difficult to ensure that they all have adequate exercise. They are apt to gain weight excessively, and they may become increasingly helpless as they grow older. The difficulty has been met by devising "walking machines" in which the child stands inside a ring mounted on a wheeled frame. Such an arrangement is open to the objection that the occupant has to be lifted in and out of the apparatus at each short exercise, and the construction generally is such that

the tendency is to walk in a circular path. Miss Elsie L. Thompson, a nurse at present in charge of crippled children, has designed the combined chair and walking appliance shown in the accompanying illustration. The seat can be raised at will, and the occupant is then able to support himself by the arms and push the appliance in any direction he chooses. Thus he is often enabled to change his occupation—for instance, to fetch fresh playthings or books—without having to get help. The hinged shelf, which forms a table or desk in front of the sitter, can be moved out of the way when the occupant is being put into his seat or taken out of it. The length of the legs can be varied by adjusting the slides and securing them with the locking pins which are attached by chains. The lower part of the appliance is made heavy enough to ensure complete stability. While the whole structure must be readily movable it must not move too freely, and experience has shown that the common type of caged ball rollers form satisfactory feet. Miss Thompson (32, Sherriff-road, London, N.W. 6) has applied for a patent in conjunction with the maker (Mr. H. J. Watson, 71, Fanshaw-street, Hoxton, London, N. 1) from whom the chairs can be obtained.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.

Ashton-under-Lyne, District Infirmary.—Res. M.O. £200.

Battersea B.C.—Res. M.O. for Council's Maternity Hospital, Bolingbroke-grove, Wandsworth. £150.

Bedford County Hospital.—Second H.S. At rate of £140.

Birmingham City, Maternity and Child Welfare Dept.—Four Temporary M.O.'s. £9 10s. per week.

Birmingham and Midland Eye Hospital, Church-street.—Two Out-patient Officers. Each 1 guinea per session.

Birmingham, Queen's Hospital.—Surgeon for Out-patients. £50.

Bradford Royal Infirmary.—H.P. and H.S. Each at rate of £135.

British Solomon Islands.—Medical Missionary.

Burton-on-Trent, General Infirmary.—Cas. O. and H.P. £150.

Canterbury, Kent County Mental Hospital, Chartham.—Jun. Asst. M.O. £350.

Cardiff, City Lodge Institution.—Asst. M.O. £150.

Carlisle, Cumberland Infirmary.—Second H.S. At rate of £155.

Chester, City and County.—M.O.H. and School M.O. £800.

Chester Royal Infirmary.—H.P. £150. Also Hon. Ophth. Surgeon.

Chesterfield and North Derbyshire Royal Hospital.—H.S. £150.

Connaught Hospital, Walthamstow, E.—Res. Cas. O. At rate of £100.

Cumberland, Blencathra Sanatorium, Threlkeld.—Asst. Med. Supt. £300.

Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £150.

Doncaster Royal Infirmary.—Cas. H.S. At rate of £175.

Durham, Richard Murray Hospital, Blackhill.—Res. M.O. £450.

Edmonton, Edmonton and Brentwood Colony, Silver-street.—Consultant Neurologist. £125.

Essex County Council.—Jun. Asst. County M.O.H. £500. Also Consultant Ophthalmologist. 50 gns.

Glasgow Royal Mental Hospital.—Physician Supt.

Glasgow, St. Mungo's College, Faculty of Medicine.—Chair of Physiology.

Hampstead Borough.—M.O.H. £1000.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Jun. H.P. for Frimley Sanatorium. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150 .Also H.P. and H.S. Each at rate of £100.

Hounslow, Heston and Isleworth U.D.—Asst. M.O.H. and School M.O. £500.

Huddersfield, West Riding Mental Hospital, Storthes Hall, Kirkburton.—Asst. M.O. £350.

Ilford, King George Hospital.—H.S. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Leicester City General Hospital.—Res. M.O. £300.

Leicester, Combined Sanatorium and Fever Hospital, Markfield.—Med. Supt. £850.

Leicester Royal Infirmary.—Res. Asst. Anæsthetist. At rate of £250. Also Surgical Dresser. 10s. 6d. a week.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Lister Institute, Chelsea Bridge-road, S.W.—Morna Macleod Research Studentship in Biochemistry. 100 gns.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. to Med. Supt. £250.

London Jewish Hospital, Stepney Green, E.—Clin. Asst.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.

Manchester, Ancoats Hospital.—H.P. At rate of £100.

Manchester Babies Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.

March, Isle of Ely, C.C.—Asst. County M.O.H. and Asst. School M.O. £500.

Middlesbrough, Holgate Municipal Hospital.—Res. H.P. At rate of £170.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Res. M.O. £200.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne, Eye Hospital.—Res. H.S. £150.

Oldham Royal Infirmary.—H.S. At rate of £175.

Plymouth Central Hospital.—Res. H.S. At rate of £150.

Plymouth City Hospital.—Res. M.O. £350.

Plymouth, South Devon and East Cornwall Hospital.—Res., Anæsthetist and H.S. to Spec. Depts. At rate of £100.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. O. £175.

Princess Beatrice Hospital, Richmond-road, S.W.—Hon. Clin. Assts.

Reading, Royal Berkshire Hospital.—Res. M.O. £150. Also H.S. £150.

Royal College of Physicians, Pall Mall East, S.W.—Charles Murchison Scholarship in Clinical Medicine. 20 gns.

Royal College of Surgeons of England.—Election of Professors and Lecturers.

Royal Free Hospital and London (R.F.H.) School of Medicine for Women.—Res. Asst. Path. £150.

Royal National Orthopædic Hospital.—H.S. for Country Branch at Stanmore. At rate of £150.

Royal Naval Dental Service, Admiralty, S.W.—Dental Officers.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

Ryde, Isle of Wight County Hospital.—Res. H.S. £180.

Salvation Army, Mothers' Hospital, Lower Clapton-road, E.—Sen. Res. M.O. £150.

Samaritan Free Hospital for Women, Marylebone-road.—Hon. Surg. to Out-patients.

South Shields, Horton Hospital.—Two H.S.'s. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.

Surrey C.C.—Asst. M.O. £600.

Torquay, Torbay Hospital.—H.S. £175.

Truro Royal Cornwall Infirmary.—H.S. £170.

Wakefield, West Riding of Yorkshire C.C.—Asst. Tuber. O. £500.

Weir Hospital Grove-road, Balham, S.W.—Jun. Res. M.O. for War Memorial Maternity Home. £150.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Winchester, Royal Hampshire County Hospital.—Res. Surg. O. and H.S. At rate of £200 and £125 respectively.

Wolverhampton, Royal Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Mildenhall (Suffolk) and Woodstock (Oxford).